addition the pressures arising out of the growth of population cannot be ignored. The amount of resources that needs to be devoted to investment in this sphere is closely affected by the rate of growth of population. Consequently, the objective of planning in regard to these services should not be to ignore these factors in the interests of a narrow conception of productive investment. The need on the contrary is to adopt and orient the social services towards the specific requirements of development.

The problem of education merits special attention in view of its close relationship to general development. Planning in this field must satisfy at least three requirements. First the magnitude of the expansion programme for schools must bear some relationship to the size of the future increase in school-going population. Second, measures must be devised which meet this objective in the most economic way so that the claims made on the resources of the country are not excessive. Third, and perhaps the most important of all from the angle of development, the type of education imparted and the relative proportions between different kinds of skills produced must be closely geared to the needs of economic growth as set out in an overall plan.

The first factor would require that the education plan is prepared in terms of reliable projections of school-going population as well as projections of the distribution of this population between the urban and rural areas. The second factor may require a thorough re-appraisal of education policies and programmes. Thus lavish and expensive buildings which may be appropriate if population is static would no longer be suitable. The essential need is for a policy which succeeds in providing adequate education for the increasing numbers at relatively low current and capital costs.

The third factor is equally important. One of the primary objectives which has fashioned the entire strategy of development is the provision of employment opportunities for the country's increasing workforce. These opportunities, as explained earlier, would be largely in the fields of agriculture, industry and other tertiary sectors. Now clearly there can be a serious unbalance in the employment market if the employment opportunities provided are at variance with the training or the expectations of those seeking employment. There has already been considerable discussion in Ceylon relating to the literary, as against the technical bias in education and to the common preference for clerical and other white collar jobs. Obviously, the attempts of a development plan to provide employment in various productive fields can easily be frustrated if the requisite labour supply for these jobs is not forth-coming despite the numerical increase in the workforce. It is therefore of special importance that this problem be faced up to. It cannot be the objective of a development plan to absorb the whole or even a substantial part of the increase in the workforce in white collar jobs. It is true, of course, that the solution is unlikely to be found on the education front alone. The problem is linked up to some extent with such factors as relative rates of remuneration, consumption patterns and so on. But sound planning in respect of education can go far towards meeting the problem.

Basically it would be necessary to gear educational policy and planning to meeting the requirements of a budget of manpower utilisation. On the demand side, the development plan must provide an indication of the number and types of skills required for different purposes. The educational plan, which is taken here to include vocational and technical training, must be fashioned in terms of supplying these needs. It must be consistent with providing the requirements in manpower and skills for industrial and agricultural development and adapt the type of training provided for white collar jobs to a realistic assessment of opportunities in this field. Such a plan may involve certain bold decisions in respect of educational policy. In addition to meeting the development needs of the country it must also be consistent with the mere general educational objectives. Reference may be made in this connection to recent changes on the educational front in the Soviet Union which involved amongst other things a reduction in the school-leaving age and a closer adjustment of the numbers seeking higher education to the development needs of the economy.

The programmes presented in Part II have recognised the importance of meeting the requirements of a rising school-going population and of a new bias towards vocational and technical training. Nevertheless, as in the case of programmes in the field of transport and communications, there is still considerable scope for the further improvement of these programmes through the application of more extensive programming techniques. These techniques would involve the use of long-term projections of school-going population and of estimates of manpower needs arising out of a development plan. It is only out of the general planning process itself that this data can emerge. The details of programmes presented in Part II are not complete in these respects.

HEALTH

The comments above are also applicable to the programmes presented in this report for health and housing. The plans outlined in Part II are based on the best material available to the Planning Secretariat and the Ministries. The general objectives which they reflect are broadly consistent with those of an overhall plan. Policies related to health services, for instance, have been worked out with considerable care by the Ministry concerned. Nevertheless, in this field too, more detailed programming methods have still to be applied. Considerable use could perhaps be made of population projections relating to age groups, urbanisation, &c., in detailed planning for hospitals, water supplies schemes and so on.

HOUSING

The role of housing in the pattern of development merits some special mention. With the rapid increase in population, particularly in the urban areas, the pressure on housing is likely to be specially large. It is important, therefore, that planning makes appropriate provision for housing needs. Opposite views are sometimes expressed on the priority to be given to housing in the process of development. It is contended for instance, that housing, whilst making claims on investment resources, is unproductive in that it does not lead to a flow of tangible goods, and is also not creative of permanent as against constructional employment. It is not therefore, on this view, a type of investment which contributes much to economic growth. There is, in the extreme sense, some truth in this argument. A house, unlike a factory or area of developed land produces over its lifetime a flow of services rather than of tangible goods. If all the resources of the community were devoted to housing to the neglect of other needs there would obviously emerge a lack of balance in the country's consumption pattern with a relative abundance of housing and a contrasting scarcity of such other essential needs as food and clothing. But the same argument is also applicable to other consumer products as well. There would, for instance be no point in devoting all resources to producing any clothing if this means a community that is well clothed but badly housed and fed! The argument is not, therefore, one that is peculiar to housing. A point that has validity, however, is that a housing programme, like any other programme, cannot run ahead of the availability of physical resources. This underlines once more the importance of constructional materials. Housing requires amongst other things bricks, tiles, cement, timber and labour. Where these materials promise to be in short supply their production is an obvious first priority. An attempt to carry through a housing programme which is not linked to the availability of these resources will only result in an inflationary raising of costs. In the early phase of a development plan it may therefore be necessary to restrain the pace of house building and to devote investment resources to the production of constructional materials. But this involves not an arbitrary cutting down of a housing programme but its integration with other programmes in the field of constructional materials. The housing programme will itself provide a good part of the stimulus for the latter.

In one sense, perhaps, the case for housing in the context of development strategy is less strong. Since the rate of growth of the economy depends largely on the availability of capital goods, investment in fields which help increase the latter, e.g., export earning or import saving activities—may claim greater priority. But even here the issues are not all straightforward. For instance, in conditions of an acute housing shortage rents will tend to rise leading to higher living costs and increased wage demands. These factors may themselves undermine the entire development effort. On the other hand, even an effective control of rents, assuming this were possible, may only result in a diversion of purchasing power to other consumer needs and to a raising of consumer imports. The objective of import savings may thus be frustrated. Above all, inadequate housing will have such deleterious effects on the health and morale of the population as to destroy the very basis of a successful development effort. Such an effort requires the maximum of popular enthusiasm and support and a background of political stability. These cannot be sustained for long in a democracy if the fruits of development are too late in coming.

A housing programme must therefore have an important part in a development plan. The need for low cost, economical methods of construction is, however, particularly great. The adoption of self-help methods in housing, specially in the rural areas, merits the greatest encouragement. As in the case of other social services detailed programming in the field of housing has yet to be undertaken. In Part II of the present report, a general programme in this field is outlined. This programme provide a basis for the further work that needs to be done.

6—J. N. R 2359 (6/59.)

IX. The Pace of Development

The preceding sections have discussed the basic strategy of development in terms of priorities and directions of future growth. The pace at which this development takes place is however of crucial importance. When population is growing rapidly it is not sufficient that development is taking place according to the right pattern and in the right direction. It is also necessary that it takes place fast enough so that year by year output outstrips population.

The consequences of too slow a pace of development relative to population growth may be simply illustrated. If, for instance, population is rising at 3 per cent per annum, net national income (or product) must also rise at 3 per cent if income (or product) per capita is to remain unchanged. A slower rate of increase will mean a fall in incomes per head and a higher rate a rise. An increase in national income, subject to some reservations, will depend on investment. The rate of investment (re-investment as a proportion of national income) must therefore be always adequate to sustain the required increase in income. If the ratio of capital to output is known it is possible to determine the magnitude or the rate of investment needed. To take a hypothetical example with an average capital output ratio of 3 : 1 and a population growth of 3 per cent. net investment must equal 9 per cent. of national income if incomes per capita are to remain unchanged. With a lower investment rate income per capita would be falling and vice versa.

The movement in per capita incomes could, indeed, be cumulative. A fall in per capita incomes, for instance, will impose pressure towards a reduction in the average rate of savings of the community as a whole. This in time drags down the rate of investment further and accelerates the fall in per capita incomes. There are no automatic corrective forces to restrain and reverse this trend. Conversely, a rise in per capita incomes tends towards a raising of the average rate of savings and a resulting increase in the rate of investment itself. The expansion in incomes per capita is thus intensified with further beneficial effects on the rate of investment. The process of change thus becomes cumulative in an upward direction. There are, of course, limits to these movements in either direction but these will not be elaborated upon here.

The conclusion that emerges is clear. Broadly speaking it is, in terms of the relationship stated here, a necessary condition for cumulative growth that the rate of investment—as measuring the pace of development—exceeds the minimum determined by the rate of population expansion on the one hand and the capital output ratio on the other (in other words the rate needed to keep per capita incomes unchanged). Given the rate of population growth, the minimum investment rate will depend on the capital-output ratio. A high or unfavourable ratio will require a higher rate of investment than a low one. But as long as the actual rate is in excess of the minimum, growth will tend to be cumulative.

Similarly, given the capital-output ratio the minimum investment rate would depend on the rate of population growth. Where the latter is high the minimum investment rate would be high and vice versa. If Ceylon was content with merely a progressive increase in living standards it would only be necessary to ensure that the rate of investment is above the minimum. The extent of the increase would then be a matter of time, preference between present and future consumption. The question of employment, however, adds quite another dimension to the problem. It is useful to examine this in brief.

A rising population will normally involve a growing workforce. As with incomes and output—and subject to some reservations again—an increase in employment will depend on investment. The relationship between investment and employment is of two kinds—on the one hand investment involves the employment of persons on the construction of projects. This is sometimes called revolving or constructional employment. Given the level of productivity per man of those employed on construction work it is easy to see that total employment of this kind will increase or decrease with the amount of investment. Investment, on the other hand, also results in the creation of employment in the running of projects after construction. This is sometimes referred to as operational or sedimented employment. It is easy to see again that as long as net investment is taking place aggregate employment of this kind will always be increasing—the extent depending on the capital cost of employment per additional person.

A stable rate of investment at the minimum level as described earlier implies a continued increase in the volume of investment. This means that at the minimum investment rate total employment—both constructional and operational—will continue to increase. There is, however, nothing to ensure that this increase will match up to the increase in the workforce. If the workforce is rising faster than employment, unemployment will continue to increase even though average incomes per capita remain unchanged. The minimum investment rate does not therefore guarantee full employment.

When the rate of investment is above the minimum rate, however, the consequences are somewhat different. It was shown earlier that in this situation the rate of investment itself would be tending upwards (through the operation of forces which raise the average rate of savings). On the assumptions of constant productivity per man in construction and a stable relationship between capital requirements per person in operational employment, it can be shown that in these circumstances total employment will rise cumulatively. Assuming again for simplicity a constant rate of increase in the workforce there would now be some point of time at which the increase in employment will equal and outpace the rise in the workforce. Once the backlog of employment is absorbed a position of full employment would be reached.

A rate of investment above the minimum level would therefore appear—in terms of the simplified relationships, set out here—to hold the promise of ultimate full employment. The essential question, however, is the period of time required for this process. The process of a spontaneous raising of the rate of investment may in fact be so protracted that the goal of full employment may only be reached in the distant future. This may well be longer than any country, faced with a serious unemployment problem, is prepared to countenance.

The moral to be drawn is that a country facing a serious employment problem cannot content itself with an investment rate which merely exceeds the minimum. It must in fact strive to realise a rate—a pace of development in other words which would measure up to the scale of its employment problems—present and potential. This investment rate cannot of course be reached overnight. But the goal must be set to attain it within a period that is both foreseeable and defined.

The raising of the rate of investment itself involves several important issues. Basically it implies the application of increasing amounts of labour and other resources to capital formation. It also implies the provision of the equipment and consumption requirements of those engaged in this process. In a fundamental sense this thus requires the creation of a surplus of production over consumption. It is essential, therefore, that in the course of development this surplus increases progressively as production expands.

At the point of commencement of a development plan the internal resources for investment would largely be obtained from the surpluses generated by existing sectors of the economy. In the case of Ceylon for instance the main sources of this surplus are the plantation crops and the activities allied to them. A predominant portion of these surpluses is channelled into government investment through taxation. A part is also reinvested directly by the industries themselves. These surpluses provide the major source of initial financing for development. In the course of development new sectors would also be created. Clearly it is essential, if the rate of investment is to rise, that these sectors will themselves yield surpluses which could be ploughed back into development. Two points of importance emerge. First the new sectors created through development must be of relatively high productivity. Where productivity is low there can be but little surplus after meeting the consumption needs of the producers. Second the opportunities for creating surpluses in the new sectors must not be foregone through policies which result only in the raising of wages to workers and the lowering of prices to consumers. Such a course can only favour stagnation.

It is possible that there is some conflict between maximising employment in a relatively short time and raising the rate of investment through the development of sectors which yield high surpluses. If, as was assumed earlier the capital requirement per unit of employment was fixed and unchanging for all sectors there would be no choice about the path to full employment. Investing in the high surplus sectors will give the quickest results. In fact, however, there is a choice since capital requirements per worker vary between different fields. Expansion in certain sectors may yield better results in terms of employment than in terms of surpluses. If the objective of reaching a high level of employment early is given, a compromise may well be necessary in the interest of employment. The compromise would be reflected in both the investment patterns selected and the period of time chosen for attaining the employment objectives.

These issues are of direct relevance to Ceylon. In the course of development new sectors of importance to the economy will be created. It is essential that these sectors themselves yield surpluses which supplement the surpluses produced by the plantations. It is largely in this way that the rate of investment can increase progressively. The whole process of cumulative economic growth would be frustrated if the new avenues of development are those where productivity is poor and surpluses are low. To some extent a compromise would be necessary between the needs of employment and of earning surpluses if Ceylon sets itself the goal of attaining a high level of employment within a relatively short period. Some emphasis may for instance need to be given to intensive agriculture and cottage industries. But even in these fields the objective of obtaining a surplus should not be ignored. On the other hand future development will involve investments in several fields where productivity and the capacity for earning surpluses are high. This is particularly true of the entire field of large and medium scale industry. It is also true to a large extent of power development, fisheries, and transport and communications.

Many of the enterprises set up within the productive fields in the future would be under various forms of public ownership. It is particularly important therefore that these public enterprises set themselves the objective of earning adequate surpluses for further capital accumulation. Nothing would be more damaging to the whole concept of development through public enterprise than an attitude which regards these enterprises as mere instruments for lowering prices to consumers or raising wages to workers. In the context of a growing public sector such an attitude will act as a powerful brake on the pace of development.

CHAPTER 2

THE TEN-YEAR PLAN

Section I—General Features

THE preceding chapter has set out in qualitative terms the major elements of a strategy of development for Ceylon. The general principles depicted there have now to be translated into a specific plan covering a definite period. The present chapter outlines such a Plan relating to the ten year period 1959 to 1968.

The period chosen is in excess of the conventional five or six years usually covered by development plans. There are two important reasons for this. First, the economic problems of the country require a scale of development far in excess of what has been attained before. A relatively short planning period would not suffice to provide for a scale of development commensurate with needs. Second, an effort on a large scale involves the initiation of several new projects and programmes. The period of time selected must be long enough to take account of the maturing of these programmes and the results to be derived from them. The trend in favour of longer planning periods has been emer[illegible]ng in other countries as well. In terms of Ceylon, a period of ten years serves to provide the necessary perspective without at the same time detracting too much from the specific character of individual programmes.

It is important that the Ten-Year Plan be of an overall and exhaustive nature. The programmes and plans that have been prepared in the past have been of direct relevance only to the public sector. Such partial programmes serve the purpose of emphasing specific measures to be taken by Government. They constitute an important initial stage in planning. But partial plans do not provide an adequate picture of the full impact of a development effort. This is particularly true in respect of such factors as national income, investment rates, balance of payments, employment levels, and so on. The Plan presented here is an overall Plan. It has been drawn up in terms of both the public and the private sectors and covers the course of development over the economy as a whole.

THE CHARACTER OF THE PLAN

As a first step in planning it is usually of help to draw up what may be described as a "plan-frame"—setting out the major economic aggregates of relevance to a development plan. Such a frame would not generally be built up from specific projects and programmes. Rather, it would serve as a guide to the subsequent preparation of such programmes.

In the course of planning in Ceylon, a number of estimates of relevance to a 'Plan-frame' were made. The paper prepared by Mrs. Joan Robinson, also provided some of the broad requirements of such a frame. In view of this background it was possible to carry the process of planning a stage further. It was possible in fact to formulate definite programmes covering the major fields of activity and to incorporate these into a single Plan. The present Plan is thus more than a framework confined merely to overall magnitudes.

For the preparation of the Plan much material was obtained from the several Ministries and Departments of Government. This information, together with consultations with Ministries, provided the basis for the drawing up of sector programmes. Wherever possible programming techniques were applied. For example, use was often made of such factors as population projections and estimates of future consumption needs. In addition other aspects of significance to planning were estimated. These include employment, output, foreign exchange outlays and savings, commencement and completion dates of schemes and so on. The programmes therefore extend beyond a mere listing of projects and their investment costs.

Nevertheless, it is necessary to mention that the Plan does not exhibit a uniform degree of firmness in all its parts. The fields of activity covered in a detailed way include tea, rubber and coconut production, fisheries, and to a large extent domestic agriculture, industries, and power. These are the main productive sectors of the economy. However, there remain other fields (particularly transport and social services) for which it has not been possible to make detailed programmes of a comparable nature. Since the Plan requires a complete coverage it was necessary to remedy this through the inclusion of estimates made on a different basis. These estimates, though not derived from actual project data, are based on several statistical magnitudes relating to past experience and future needs as well as on material supplied by Ministries. Every effort was made to ensure that the estimates are realistic and mutually consistent.

The Ten-Year Plan is not inflexible. It is important that it be understood and discussed—not only by Government agencies but also by non-official associations and the public at large. On the basis of these discussions certain revisions may prove to be necessary. It should be mentioned, however, that there is a high degree of mutual relationship between the several magnitudes incorporated in the Plan. Consequently, revisions in one field would involve a series of parallel adjustments in other fields as well.

Moreover the Plan, even after adjustments and improvements, must not be taken as representing a once and for all statement. Periodical revisions over time are of special importance. Such revisions must take into account changes in internal and external circumstances and actual experiences in respect of performance. Reference should be made in this connection to the concept of a "Rolling Plan". In terms of such a concept a forward perspective would at all times be maintained. Actual programmes would then continue to remain within the context of a long term perspective. It would be desirable to adopt such an approach in Ceylon.

THE "FOLLOW UP"

It is very desirable to follow up the preparation of the Ten-Year Plan with a specific programme applicable to a shorter period. This shorter term programme must serve a different function. The emphasis here must fall on the actual operational tasks necessary over the next three or four years for the purpose of realising the Ten-Year Plan. The operational programme must highlight the various preparatory and executive steps—covering surveys, staff requirements, training activities, project analyses, actions on contracts, &c., that would be needed in the initial phase. It must also specify the constructional work and policy measures that must be initiated. The emphasis in the short term programme would thus be more on actual operational measures than on wider economic aggregates.

SOME FACTORS OF PARTICULAR RELEVANCE TO THE NEXT TEN YEARS

Before presenting the Plan itself it is of use to outline some general factors that are relevant to the next ten years. To some extent these qualify the general principles of development outlined earlier.

The long term pattern of development depicted industrialisation as an ultimate solution to Ceylon's economic problems. The attainment of this objective implies expansion in fields of activity other than industry itself. Thus, industrial development is closely associated with the expansion of power supplies. It is also dependent on an expansion in agricultural exports and on the production locally of import saving products in such fields as agriculture and fisheries. In a Plan for the next ten years it is important to give due recognition to all these factors.

The Plan must, however, be formulated in the context of the expected increase in the workforce, by approximately 1.3 million persons between 1957 and 1968. Although the maximum of emphasis is given to industrialisation it must be recognised that over this period industrialisation could not by itself absorb even a major part of the increasing numbers.

There are two reasons for this. First, and most important, a process of industrialisation takes time. It depends on a variety of preliminary surveys, investigations and organisational measures. It also depends on the growth of managerial and technical skills and on the creation of ancillary facilities particularly power supplies. Limitations in respect of these factors will play an important part in determining the pace of industrialisation over the next ten years.

Second, there are technical factors which limit the absorptive capacity of industries in respect of manpower. Several of the more important industries which are feasible in Ceylon (e.g., cement, fertilisers, sugar refining) are likely to be relatively capital intensive. As shown in a subsequent chapter, the average investment cost in fixed capital per man employed in the large scale projects works out to as much as Rs. 40,000. There is, of course, considerable scope for medium scale industries as well which are less capital intensive. But even after allowance is made for these, the contribution to employment which the programme for large and medium scale industries affords (somewhat more than 100,000 workers) does not compare with the potential increase in the workforce.

Some important conclusions emerge. The first is the importance of providing for a vigorous supplementary programme for the expansion of small scale and cottage industries. From the point of view of employment relative to capital costs, it is these industries which can be of greatest use. An effective small-scale and cottage industries programme should not, however, be confined to handicrafts or to types of production involving out-dated and primitive techniques. On the contrary, a good part of it must be based on the use of power driven machines.

The second conclusion is of equal or greater significance. Even with an ambitious industrial programme, inclusive of small-scale and cottage industries, there would still remain a large number of persons for whom employment would have to be found in other fields. Agriculture is naturally the most important of these. Fortunately, the long term limits to the absorptive capacity of agriculture, discussed in an earlier chapter, have in no way been reached. Much use should therefore be made of the opportunities for expansion in this field over the next ten years. This would cover not merely extensive agriculture in the sense of developing new land but also intensive agriculture aimed at improving the productivity of lands already under cultivation.

It would be true to say that success on the agricultural front is of crucial importance over the next decade. As emphasised before, agriculture plays a central role in development by contributing to both the earning and saving of foreign exchange. But its importance is also of significance from the point of view of manpower. The extent of urban unemployment is closely related to the prosperity of the rural areas. If the country's agricultural efforts fail to provide work and to improve the living standards of the growing rural population there may emerge a situation where the rate of migration to the towns is excessively large. The scope for creating employment opportunities in urban areas within a limited period through industrialisation and other activities is not indefinite. An excessive migration of labour to the towns, in consequence of a failure on the agricultural front, may therefore give rise to serious problems and jeopardise the entire Plan.

The need to activise the rural areas is therefore fundamental. But it is not only through agricultural activities that the prosperity of the rural areas can be improved. Emphasis should also be given to the creation of other types of work. A programme of small-scale and cottage industries would itself be of help. But in addition, a vigorous programme of rural betterment covering housing, road improvement, and constructional work in agriculture and in social services could play an important role.

All this underlines the vital role of the concept of community development. Community development, by mobilizing manpower on a voluntary or self-help basis for construction work could release substantial financial resources for other uses. It constitutes a partly non-monetized form of capital formation. But in addition to this it also serves as a particularly effective means of mobilizing public co-operation and enthusiasm. Self-help schemes should be planned and executed by the people themselves in the light of their own assessment of needs. Government assistance in the way of finance, materials and skills, must be provided at strategic points as a necessary supplement. Such schemes must not be considered as marginal to other programmes. On the contrary their role must be a central and dynamic one.

In planning for the next ten years it is also necessary to make adequate provision for the social services—health, education, and housing. In the background of a rising population they inevitably secure an important place in the pattern of priorities. The size of the programme in this field must correspond to needs as measured by population growth. This implies heavy claims on investment resources—particularly for housing. The need for economy in respect of standards and construction costs is, therefore, particularly important.

The Plan as a whole has been drawn up so as to ensure that the absorption of manpower by the end of the 10 years is comparable to the expected increase in manpower resources. It provides for rates of expansion in individual sectors of the economy which together should achieve this end.

Nevertheless, this does not mean that once a high degree of manpower utilisation has been attained the country could relax its development efforts. There would be a continued increase in the size of the workforce even after the ten year period. Unless the rate of development is at all times adequate to keep pace with this increase unemployment and idle manpower would reappear.

BASIC ASSUMPTIONS UNDERLYING THE TEN-YEAR PLAN

The preceding section outlined some general issues of relevance to the next ten years. In addition to these the economic development of Ceylon also depends closely on a number of external and internal factors of a fundamental character. Some of these are beyond the control of the country and cannot be foreseen. Others are subject to local decisions and responses. A Plan has, however, to be based on certain assumptions concerning these factors. The present section briefly summarises the basic assumptions that underlie the present Plan.

The assumptions regarding external factors are as follows:

(1) It has been assumed that during the 10 year period in question there will be no serious international depression.

Broadly this assumption seems justified. There is at present a better understanding of the nature and cause of economic depressions than prevailed a few decades ago. There is also a better knowledge relating to the measures needed to check or prevent such unfavourable developments.

(2) It has been assumed that the terms of trade will on average be equal to those of 1957.

In view of the fact that the terms of trade in 1957 were not particularly favourable, this does not appear an over-optimistic assumption. On the other hand, there does not seem to be sufficient ground for assuming that the terms of trade would necessarily improve during the plan period. Not only in Ceylon but in many other countries determined steps are being taken to increase the production of tea, rubber and coconuts.

(3) It has been assumed that outside assistance in respect of skills and finance will be forthcoming in sufficient degree.

Although the Plan is based primarily on the mobilization of domestic resources its implementation will also involve the continuance of a measure of such assistance. It is, of course, possible that in some years financial aid may fall short of what is required. For instance, fluctuations in the terms of trade may result in unfavourable periods during which the need for foreign exchange would exceed receipts from abroad. It is assumed that internal financial policies will as far as possible anticipate and adapt themselves to such fluctuations.

Regarding internal factors, it has been assumed:

(1) that population and the work force will increase between 1957 and 1968 by 38.2 per cent and 37.8 per cent respectively;

These increases are in accord with population and workforce projections referred to elsewhere in this Report.

(2) That the financial and monetary policy of the government will be geared to the implementation of the Plan.

This would imply, among other things, that such policies would be directed towards the husbanding of resources in favourable years for the purpose of their use in unfavourable years.

(3) that defence commitments will impose relatively limited strains on resources ;

(4) that the determined efforts required of both the government and the people for the realisation of the Plan would be forthcoming.

The Plan is in several respects ambitious. For its implementation Gross Domestic Product has to be stepped up considerably in all sectors ; import replacing production and export expansion have to take place on a large scale ; and both government and private consumption have to be kept within the limits consistent with the investment programme. It has been assumed that all concerned will understand the requirements of the Plan, be prepared to exercise the necessary self-discipline, and strive to the utmost to realise the targets of the Plan.

THE BASIC OBJECTIVES OF THE PLAN

Besides the assumptions set out above the physical Plan has also taken into account a number of basic objectives. These are :

(*a*) that the plan should aim both at providing employment for the increase in the workforce and at bringing about a certain reduction in existing unemployment and under-employment ;

(*b*) that the plan should as far as possible aim at equilibrium in the balance of payments on current account or at least a limited deficit capable of being compensated for by borrowing and grants from abroad ;

(*c*) that the plan should aim in the long run at raising the standard of living since this is the ultimate purpose of economic development ;

(*d*) that the Plan should provide for the diversification of the economy so as to make it less vulnerable to external changes.

(*e*) last, but not least, that the Plan should further an equitable distribution of national income. In a situation of chronic unemployment the creation of employment opportunities is itself the most potent of instruments towards this end. But considerations of equity also affect the financing techniques used.

In the light of these objectives it was necessary to fit together the developments projected for the several sectors of the economy into a consistent and balanced overall Plan.

THE METHOD OF PREPARATION

The essential task in the preparation of a plan is to arrive at a balanced physical programme which, on certain assumptions (set out above), will realise the basic objectives. Although no detailed account can be given here, the present section briefly outlines the methods underlying the preparation of the Plan.

The end result of a balanced physical programme may be presented in the form of an account setting out the major components of Gross Domestic Expenditure. Such an account depicts in a nutshell the essential aggregate of a development Plan. This is illustrated by the table below which compares a pre plan year (1957) with the last year of the Plan (1968).

TABLE I

Gross Domestic Expenditure (1957 and 1968)

(Rs. million)

(at prices of 1957)

	Amount		*Increase percentage*		*Amount*		*Increase percentage*
	1957	1968			1957	1968	
1 Gross domestic product (at factor cost)	4,975	9,445	90	4. Private consumption	3,981	6,570	62*
2. *Less* domestic exports of goods and services	1,713	2,309	35	5. Government consumption	537	860	60
3. *Plus* retained imports of goods and services	1,926	2,285	19	6. Gross investment	670	1,991	197
Total	5,188	9,421	82	Total	5,188	9,421	82

* The percentage has been adjusted to offset the effects on value of a shift in the share of domestic production in total supplies of rice available for consumption.

The left side of the table shows the total of physical resources available to the country for purposes of consumption and investment. If there was no trade with the outside world these resources would be the equivalent of the country's Gross Domestic Product. However, where part of Gross Domestic Product is exported this part has to be deducted and imports added to give the total of available physical resources. The right side of the table shows the use of these resources for private and government consumption on the one hand and for gross investment on the other. The totals on the left and right sides must necessarily balance. The figures in the table also show the percentage change that would take place in each of the items between 1957 and 1968. Private consumption, for example, would increase by 62 per cent. over this period.

On the basis of a balance between the right and the left sides it is, of course, possible to construct a great variety of programmes each of a different character. Greater or lesser stress may, for instance, be laid on an increase of private consumption. Similarly the target for stepping up gross investment can be raised or lowered. It should however be realised that these possibilities are circumscribed by the need for self-consistency. For example, if the level of future private consumption is too high, gross investment may fall short of that required for a sufficient increase in gross domestic product. Additional imports would then be necessary to realise the target for consumption. This may result in an unacceptable deficit in the balance of payments. Further, the lower level of investment may not suffice to absorb the additional numbers entering the workforce.

The short description above underlines the close inter-relationship between the several items in the Plan. It would, however, be an over-simplification to suggest that a table such as the one above would suffice to indicate the balance and consistency of a Plan. For instance, within the investment figure depicted for 1968, a great variety of investment patterns is possible. A change in the distribution of investment between the various sectors will alter several items. These include the magnitude and composition of gross domestic product, the amount of exports and imports, the amount available for consumption and the size and distribution of employment. A choice is also possible in respect of the capital intensity of investment. But if investment is mainly capital intensive its total value may fall short of what is required to absorb employment. On the other hand if it is increased to remedy this, too rigid a restriction in consumption may be involved.

To take account of these and other inter-dependencies, tables concerning gross domestic product, imports, sales to the home market (distribution between private consumption, government consumption and gross investment) and exports were constructed for each of the several sectors of the economy.[1] Inter-related estimates of manpower and investments were also made. For the base year (1957) statistics provided by the Department of Census and Statistics were used together with supplementary calculations by the Planning Secretariat. For the projections, use was made of the programmes submitted by the several Ministries. To arrive at a balanced and self-consistent programme a large number of estimates and calculations were needed and a satisfactory result was obtained only through a series of successive approximations. Existing plans had to be made consistent, involving the scaling down of some programmes and the expansion of others. Estimates had also to be made for all unplanned sectors. Several checks had to be applied to test the plausibility of estimates. These checks included such factors as investment per extra worker, increases in labour productivity, consumption elasticities, and the consistency of production patterns with expenditure patterns. In all these exercises care was taken to apply standard United Nations definitions wherever possible. There are nevertheless many exceptions. Moreover, because of possible variations in the pattern of indirect taxes and subsidies over the period of the Plan all estimates have been made at factor cost rather than at market prices.

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[1] One table summarising some of these detailed tables is illustrated in the appendix to this chapter.

It is not possible in the present Report to describe these processes in detail. In the sections that follow only the final results are shown. In appraising these results, however, it should be borne in mine that on account of the inter-dependence of the several estimates it would not be possible to change some magnitudes without at the same time changing others.

It should be mentioned in conclusion that the statistical material available was not adequate in all respects. Several figures, including some relating to the base year, are only approximations. The absence of adequate time series precluded checks being made on assumed development rates. All this should not, of course, be regarded as constituting too serious a handicap. No plan dealing with the uncertainties of future development can be perfect. Undoubtedly, several detailed figures can be criticised and will need to be revised in time. In addition, planning techniques can evolve still further—particularly in the direction of analysing inter-industry relationships. These limitations should not, however, prevent the present plan from serving its main purpose. This is to indicate the order of magnitude of the economic and financial problems which this country has to face and solve over the next ten years.

Section II—Overall Magnitudes

An outline of the overall features of the Plan is presented here. The programmes for individual sectors of the economy are discussed in more detail in Part II of this Report. The present section discusses the Plan in terms of the following, (1) Population and Workforce, (2) National Income, (3) The Pattern of Investment by Sectors, (4) Public and Private Sectors, (5) Sectoral Output Targets, (6) Manpower Goals and (7) Balance of Payments aspects. The financing of the Plan is dealt with in the succeeding chapter.

It must be emphasised at the outset that all estimates of value covering the several years of the Plan are calculated at constant 1957 prices. In other words all changes in values relating to investment, output and other items correspond to physical or real changes and not to price changes. This does not imply any expectation that prices will remain unchanged over the period the Plan. On the contrary such changes must be taken into account in regular revisions of the Plan.

In most instances the Plan is presented in terms of goals and objectives to be reached over the 10-year period, i.e., by 1968. The year of commencement of the Plan is 1959. The base year for the purpose of measuring changes and rates of expansion is however, 1957. This was latest period for which the extensive statistical material needed for the preparation of the Plan was available. In the case of investment targets, which form the major operational portion of any development plan, annual estimates covering the entire 10-year period are presented in addition to the 1968 goals. These estimates depict the course of investment throughout the period as well as the total investment cost of the Plan as a whole.

(1) POPULATION AND WORKFORCE

Projections of population and workforce by five-year intervals over the 25-year period 1956-1981 have been published separately by the Planning Secretariat.[1] The main results have been summarized in a previous chapter.

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[1] S. Selvaratnam, *op cit.* and R. M. Sundrum *op cit.*

For the purposes of the Plan estimates were also made of expected annual changes in population and workforce over the ten-year period based on the medium projection. These are shown below :

TABLE II

Population and Workforce (1957-1968)

(Figures '000)

	Base year 1957	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	*Increase* 1957-68
Population												
Males	5,065	5,363	5,518	5,678	5,841	6,009	6,181	6,359	6,541	6,728	6,920	1,855
Females	4,593	4,885	5,038	5,195	5,356	5,522	5,693	5,870	6,053	6,239	6,431	1,838
Total	9,658	10,248	10,556	10,873	11,197	11,531	11,874	12,229	12,594	12,967	13,351	3,693
Workforce												
Males	2,676	2,822	2,898	2,976	3,062	3,151	3,242	3,336	3,432	3,532	3,636	960
Females	832	887	915	945	978	1,012	1,047	1,083	1,121	1,158	1,197	365
Total	3,508	3,709	3,813	3,921	4,040	4,163	4,289	4,419	4,553	4,690	4,833	1,325

3103

3709

1124

These projections as mentioned previously depend on certain assumptions. Nevertheless, it should be borne in mind that for the next ten years the size of the workforce is not affected by future changes in birth rates. The workforce estimates could vary with alternative assumptions about participation rates. But the differences are not likely to be significant as long as these assumptions remain realistic.

(2) NATIONAL INCOME, CONSUMPTION AND INVESTMENT

As shown above, the total population of Ceylon in 1957 is estimated at 9,658,000. By 1968 population is expected to rise to 13,351,000—an increase of 3,693,000, or 38.2 per cent. over 1957. National income in 1957 is estimated at Rs. 4,742 million or Rs. 491 per person. Briefly, the Plan aims at a progressive increase in Ceylon's national income by 1968 to Rs. 8,905 million, or Rs. 667 per person in terms of the population of that year. In percentages, national income will rise by 88 per cent. and per capita income by 36 per cent. The average annual rate of increase in national income over the period is 5.9 per cent. This compares with average annual rate of population growth of 3.0 per cent. The annual rate of increase of income per person works out on average at 2.9 per cent.

These figures relate to National Income. In the sections to follow, depicting changes in consumption, investment and other factors, the concepts of Gross Domestic Product and Gross Domestic Expenditure have been used.[1] The allocation of the Gross Domestic Expenditure between consumption and investment in 1968, as envisaged by the Plan, is shown below :

TABLE III

Gross Domestic Expenditure, Consumption and Investment (1957 and 1968)

(*Rs. Million*)

(at 1957 prices)

	Base year 1957 *Amount*	*As Per cent of Gross Domestic Expenditure* (1957)	*End of Plan Period*, 1968 *Amount*	*As Per cent. of Gross Domestic Expenditure* (1968)
1. Gross Domestic Expenditure*	5,188	100·0	9,421	100·0
2. Private Consumption	3,981	76·7	6,570	69·7
3. Government Consumption	537	10·4	860	9·1
4. Gross Investment†	670	12·9 13·6 NP.	1,991	21·1

* See Table II p 65,

† Including increase in stocks.

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[1] The conversion of Gross Domestic Product to Gross National Product and National Income is shown below :—

	1957	1968	*Increase Per cent.*
1. Gross Domestic Product at factor cost (prices of 1957)	4,975	9,445	90
2. Net factor income from abroad	— 53	— 115	117
3. Gross National Product at factor cost (prices of 1957)	4,922	9,330	90
4. Less provision for the consumption of fixed capital	180	425	136
5. Net National Product at factor cost = National Income (prices of 1957)	4,742	8,905	88

DIAGRAM- II

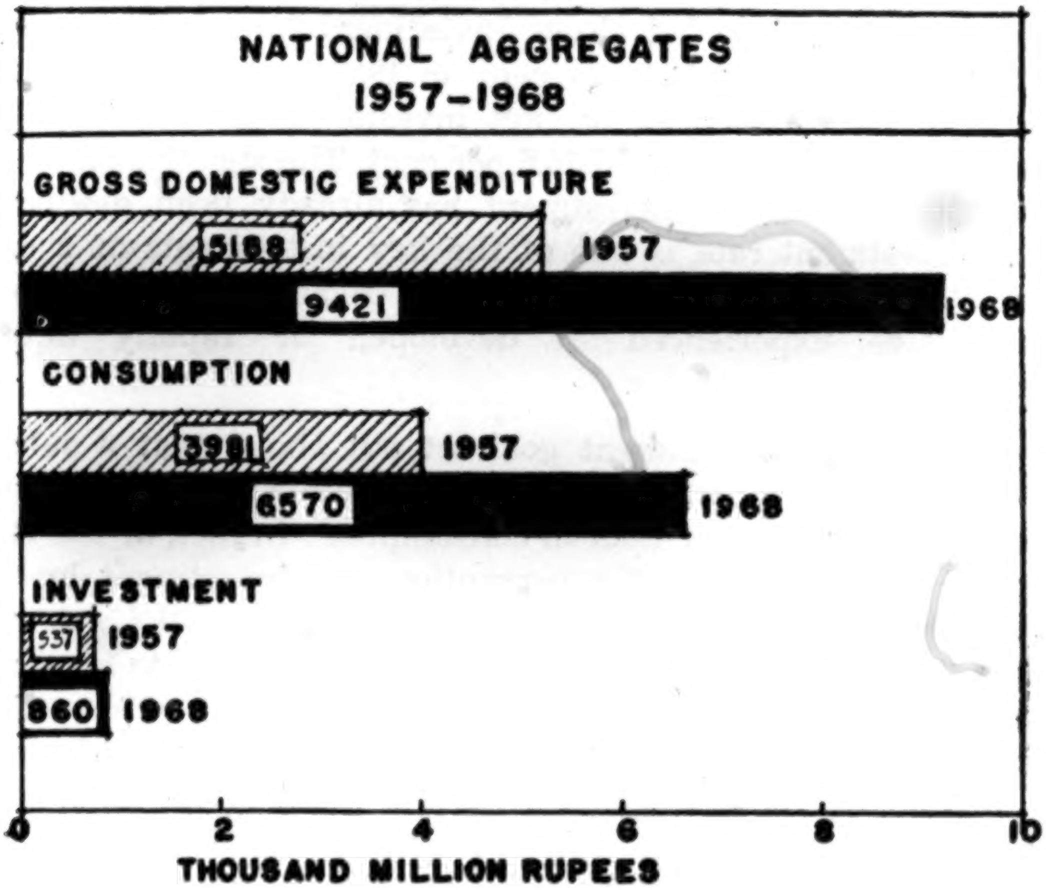
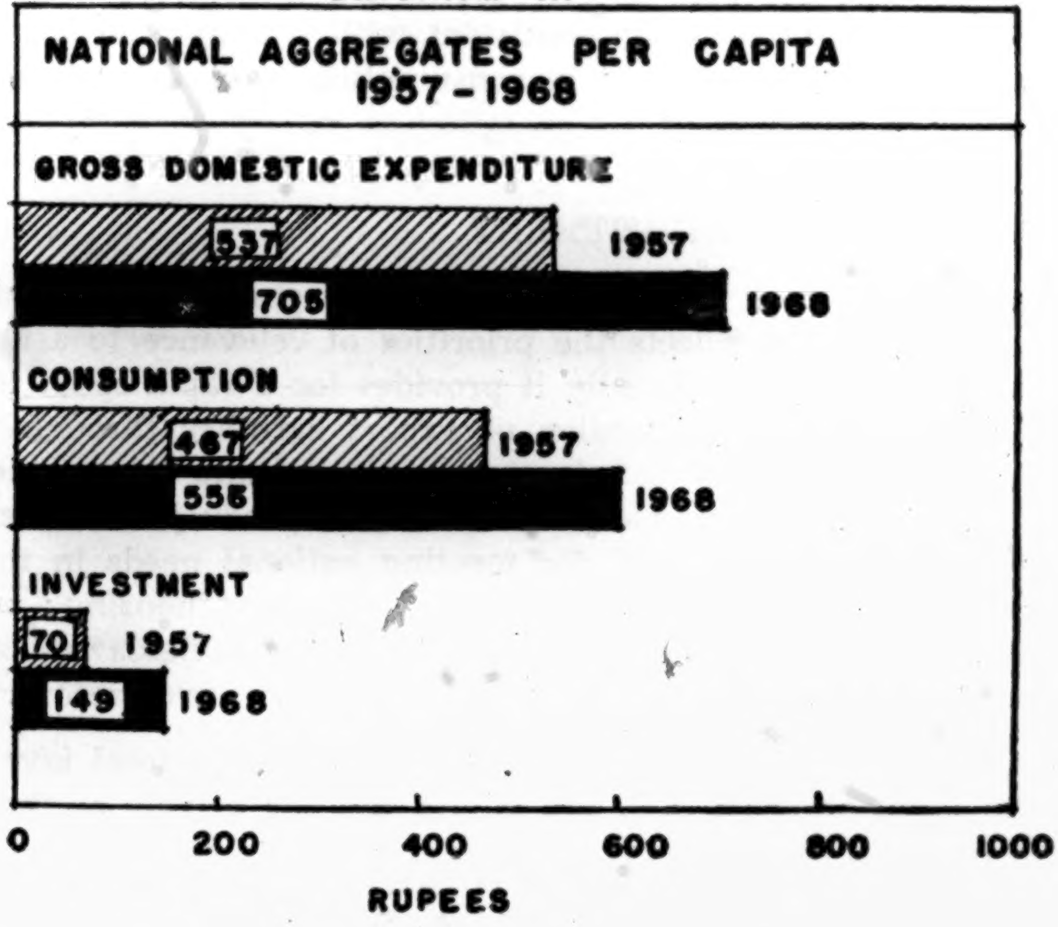


DIAGRAM - III



The Plan postulates, as shown above, an increase in the rate of gross investment (i.e., the share of Gross Investment in the Gross Domestic Expenditure) from around 12.9 per cent. in 1957 to 21.1 per cent. in 1968. The corresponding proportions for net investment have been estimated at approximately 9.4 per cent. and 16.6 per cent. The significance to growth of a raising of the rate of investment has already been discussed. An accelerated investment rate is one of the key instruments of a development plan. The rate envisaged here is a relatively high one which approaches rates experienced in developed or rapidly developing economies.

It is implicit in the investment goal set out above that a substantial share of the expected increase in Gross Domestic Expenditure would be devoted to investment rather than to consumption. In fact, of the Rs. 4,233 million increase in the total of consumption and investment by 1968 as compared to 1957 31.2 per cent. or Rs. 1,321 million will be devoted to investment purposes and 68.8 per cent. or Rs. 2,912 million to consumption. The increase in consumption provided by the Plan should suffice not merely to protect existing living standards in the face of a rising population but to increase these standards. On the basis of the figures in the table above total consumption by 1968 increases by 62 per cent relative to 1957.[1] The rise in consumption per person is 17 per cent.[1]

In overall terms, then the Plan provides for an increase in national income faster than the rate of increase in population, for a raising of the rate of investment to levels consistent with the needs of accelerated growth and for an improvement in consumption levels in the face of a rapid increase in numbers.

(3) THE PATTERN OF INVESTMENT

The main operative part of the Plan is the investment programme. The investment programme reflects the priorities of relevance to a development strategy for Ceylon. Broadly it provides for a rapid spurt towards industrialisation ; for the expansion of export earnings through raising the output of plantation crops ; for import saving and the provision of domestic requirements in respect of a variety of products in agriculture, animal husbandry and fisheries, for meeting national needs in the field of social services particularly education, health and housing ; and for achieving levels of activity and expansion over different fields sufficient for the fullest absorption of the country's growing manpower resources.

The total cost of the programme, in other words the total investment cost of the Plan, covering both the public and the private sectors, over the entire 10-year period 1959-1968 is Rs. 13,600,000,000. These investments are distributed over the major fields of activity as follows:

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[1] These percentages have been adjusted to offset the effects on value of a shift in the share of domestic production in total supplies of rice available for consumption.

TABLE IV

Total Gross Investment (1959–1968 inclusive*)

(At market prices of 1957)

Sector	*Amount Rs. million*		*Percentage of total*	
Agriculture		**3,110**		**22·9**
Main Export crops				
Tea	507		3·7	
Rubber	411		3·0	
Coconut	315		2·3	
Other agriculture and Animal Husbandry				
Irrigation and Land Development	1,092		8·0	
Specific agriculture Crops and Animal Husbandry	785		5·8	
Fisheries				
(Excluding fisheries harbours)		**218**		**1·0**
Industry		**2,714**		**20·6**
Large and Medium	2314		17·0	
Small-scale and Cottage	400		2·9	
Electricity		**826**		**6·1**
Transport and Communications*		**1,946**		**14.3**
Roads	516		3·8	
Railways	301		2·2	
Ports*	372		2·7	
Aviation	48		·4	
Posts and Telecommunications	153		1·1	
Vehicles and miscellaneous	556		4·1	
Construction		**325**		**2·4**
Social Investments		**3,571**		**26·3**
Housing	2,725		20·0	
Health	446		3·3	
Education	400		2·9	
Public Administration		**180**		**1·3**
Other Services		**711**		**5·2**
GRAND TOTAL		**13,600**		**1·000**

The small discrepancy between the total and the constituent items is due to rounding.

*** Includes provision for Fisheries Harbours.**

The figures above indicate the relative emphasis which the Plan places on investment in the several sectors of the economy. The relative amounts provided for each sector have nevertheless been conditioned by an additional factor—the practicability (taking account of physical limitations and the time available for overcoming them) of actually carrying through expanded investment programmes in these fields. The distribution of investment shown above must not be considered inflexible. In assessing investment requirements over a period as long as ten years only rough approximations are possible. In the course of time, as experience is gained of the implementation of programmes, it would be necessary to appraise and revise the provisions in respect of individual sectors of the economy. In this process the share of some sectors may rise above that envisaged here whilst the share of others may fall. But it is not expected that these revisions would alter drastically the general pattern of investment shown here. These reflect the directions in which the economy must expand in the future if its problems are to be adequately solved.

The high provision for industry and power (26.1 per cent. of the total) reflects the new emphasis to be placed on industrialisation. It is one of the major objectives of the Plan to take a decisive step forward over the next 10 years towards industrialisation. Industrial development is, relatively speaking, a capital intensive process. Although provision has been made for small-scale and cottage industries which are less capital intensive it is inevitable that total capital costs of an accelerated industrial programme would be relatively high. It is true that in the context of past experience the goals set for industrialisation may appear particularly ambitious. As in other fields, no absolute accuracy can be claimed for the investment figures. The estimates provided here do, however, indicate the order of magnitude against which the goals of industrialisation should be set.

The provision for agriculture and fisheries (24.5 per cent. of the total) though somewhat less than for industry and power is also substantial. Nevertheless figures of capital cost in this field do not convey a true impression of the role given to agricultural expansion in the Plan. Agriculture is generally less capital intensive than industry—particularly where expansion depends on increasing crop yields on lands already under cultivation. In fact much of the costs involved in expanding agricultural output are of a current nature embracing extension services, subsidies for fertilisers, planting materials, price incentive schemes and so on. These costs are naturally not reflected in the investment estimates of the Plan.

Investments in the field of transport and communications generally tend to be capital intensive. This is reflected in the provision made for these categories in the Plan. In addition to the purchase of equipment, construction activity is of particular importance here.

Housing obtains one of the largest shares in the classification above (20 per cent. of the total). The place of housing in the pattern of investment has been discussed elsewhere. The high provision in this field is an aspect of the social needs of a rapidly growing population. It is, however, envisaged that part of the investment cost of housing—particularly in the rural areas would be non-monetized on the basis of self-help programmes. The magnitude of the housing programme, provides a partial measure of the claims that would be made on constructional material and other products of industry over the ten-year period.

In assessing the investment goals for health and education (6.2 per cent. of the total) it is important to bear in mind that a preponderant part of the cost of these services is of a current rather than a capital nature. The figures above refer only to capital costs covering buildings and equipment. The capital element in this field is only an aspect of an extensive programme of expansion based on the needs of a growing population. It is important to mention that in this, as in all other spheres, costs of land acquisition (which are in the nature of capital transfers) and of residential quarters for staff (which are provided for under housing) are excluded.

Public administration comprises office buildings, secretariats, and items of office equipment by government for all its activities. Defence equipment is excluded from investment costs. By convention they are treated as current consumption in systems of national accounts. The category 'construction' refers to investments made purely by constructional agencies covering largely construction equipment and buildings relating strictly to constructional work. The item 'other services' embraces investments in connection with the whole complex of service industries in the country. These fall almost exclusively in the private sector.

The figures in the previous table depict the aggregate of investment over the whole of the ten-year period. Though detailed comparable figures are not available, these certainly represent for every field, a considerable stepping up of investment levels over what has prevailed in the past.

The Plan does not, of course, envisage an even level of spending from year to year. The total investment depicted will be made through progressively rising outlays. In the earlier period increases in investment would be relatively moderate. In later years the rise would be sharper. By the end of the Plan period, i.e., 1968, investment would reach the highest levels. The rising trend in investment outlays reflect at least three factors. First, that physical capacities for construction would expand progressively from year to year, second that resources for investment would themselves be augmented as incomes and output increase and third that investment needs will grow with expanding markets and consumer demands.

Table V below depicts a phasing of investments by sectors over each of the 10 years of the Plan. The phasing is not intended to be a rigid one. It essentially sets out the path by which investments as a whole would be progressively stepped up over the period. A more accurate phasing of the Plan would emerge year by year along with actual budgetary provisions. The phasing provided here provides a framework, against which the more detailed annual plans can be fashioned. However, in respect of several investment fields the phasing shown here reflects the design of detailed programmes. Hence in some cases, for technical reasons individual investment patterns do not exhibit continually rising trends.

A comparison of the investment pattern to be realised by the end of the Plan period, i.e., 1968, with that prevailing in 1957 reveals most clearly the nature and extent of the transformation in investment activity which the Plan is seeking to achieve. As previously mentioned, investment as a whole will rise by 193 per cent. from 1957 to 1968. For each of the major fields of the economy the increases envisaged are shown in Table VI below :

TABLE V

Annual Investment Outlays (1959–68)

(At Market Prices of 1957)

(Rs. million)

Field of Investment	*Base Year* 1957	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	*Total outlay* 1959–68
Export Crops												
Tea	27	33	36	43	45	49	54	56	61	63	67	507
Rubber	46	34	38	41	41	42	43	42	42	45	43	411
Coconut	24	27	29	31	32	33	33	33	33	33	33	315
Other Agriculture												
Irrigation and land development	90	51	58	78	89	100	114	124	142	155	181	1,092
Specific agricultural crops and animal husbandry		45	51	58	63	71	80	89	98	109	121	785
Fisheries												
(Excluding fisheries harbours)	5	15	24	33	25	29	17	19	20	20	16	218
Industry												
Large and medium	55	90	136	188	178	207	215	260	300	340	400	2,314
Small-scale and cottage (*a*)		5	10	20	30	45	50	60	60	60	60	400
Electricity	51	7	51	60	115	93	114	83	98	105	100	826
Transport and Communications (*b*)	117	112	152	184	203	194	187	198	212	237	269	1,946
Construction	8	10	12	15	18	20	30	40	50	60	70	325
Education	20	22	24	27	31	35	40	45	51	58	67	400
Health (c)	23	28	33	36	39	42	45	49	53	58	63	446
Housing	139	150	169	190	214	242	273	308	347	391	441	2,725
Administration	14	14	17	17	17	18	18	19	19	20	21	180
Other Services	42	49	53	57	62	67	72	78	84	91	98	711
Total	700(*d*)	692	893	1,078	1,202	1,287	1,385	1,503	1,670	1,845	2,050	13,600

(*a*) The figures are net of depreciation charges which have been included under 'Industry—Large and medium'.

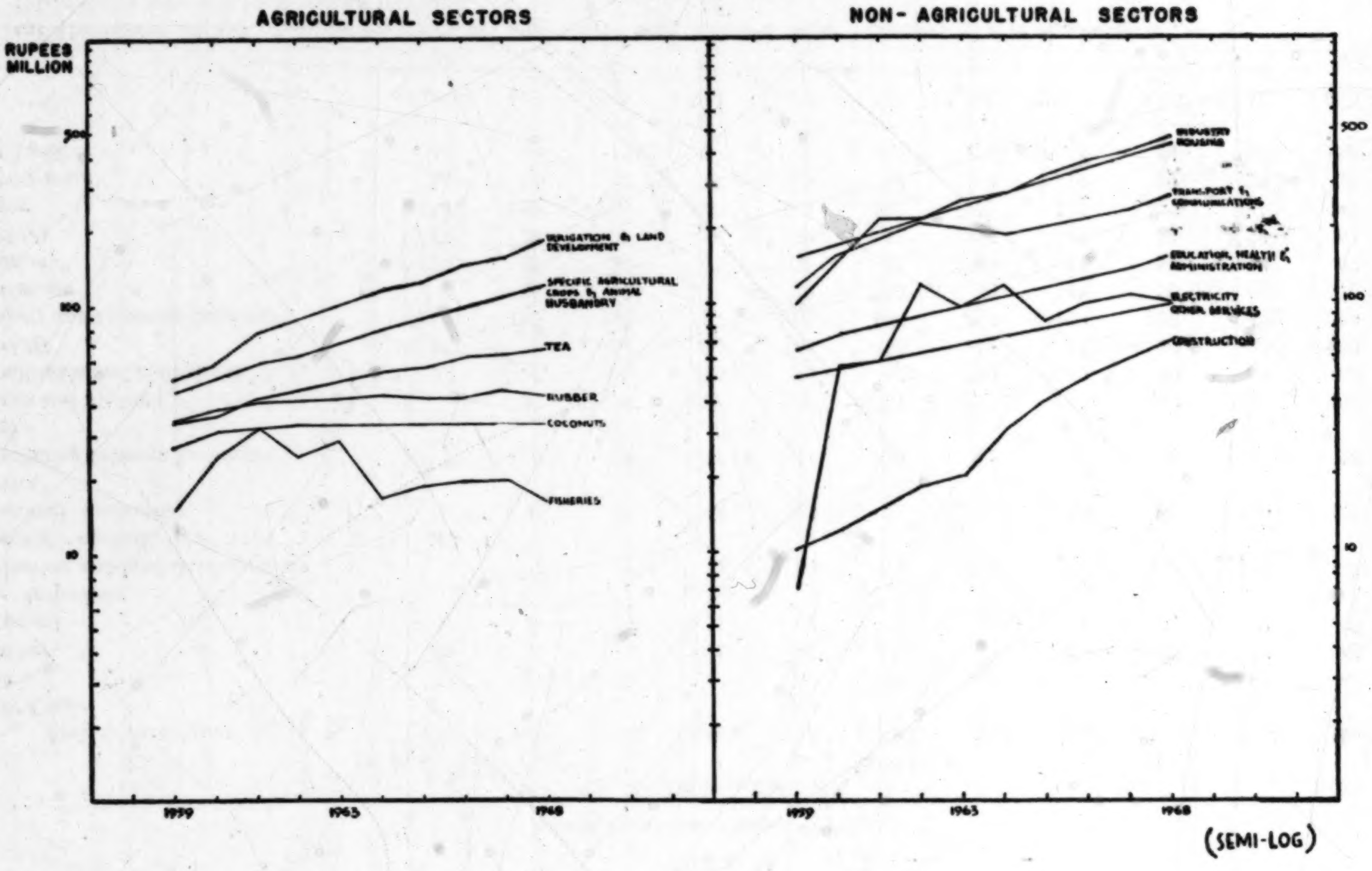
(*b*) Includes provision for Fisheries Harbours.

(*c*) Including Water Supply and Drainage.

(*d*) Includes increase in stocks of about Rs. 40 million (Rs. 12 million in tea and rubber). Any discrepancy between the constituent items and their totals is due to rounding.

(*e*) Totals may not add exactly because of rounding

DIAGRAM - IV
ANNUAL INVESTMENT OUTLAYS
1957 - 1968



AGRICULTURAL SECTORS

NON- AGRICULTURAL SECTORS

(SEMI-LOG)

TABLE VI

Comparative Investment, (1957 and 1968)

(At Market Prices of 1957)

	1957		1968		*Increase*	*Percen-*
	Amount Rs. M.	*Per cent. of total*	*Amount Rs. M.*	*Per cent. of total*	*Over 1957 Rs. M.*	*tage*
Export crops	97	13·9	143	7·0	46	47
Other Agriculture	90	12·9	302	14·7	212	236
Fisheries	5	0·7	16	0·8	11	220
Industry :						
Large and medium Small-scale and Cottage	55	7·9	460	22·4	405	736
Construction	8	1·1	70	3·4	62	775
Electricity	51	7·3	100	4·9	49	96
Transport and Communications	117	16·7	269	13·1	152	129
Housing	139	19·9	441	21·5	302	217
Health	23	3·3	63	3·1	40	174
Education	20	2·9	67	3·3	47	235
Public Administration	14	2·0	21	1·0	7	50
Other Services	42	6·0	98	4·8	56	133
Total	700*		2 050		1,350†	193

*Including increases in stocks of about Rs. 40 million.

†Difference between total and constituent items is due to the stocks change (not specified) in 1957

As the figures above indicate the Plan envisages that the amounts invested annually in all sectors of the economy will rise considerably by 1968[1]. But the increases are particularly notable in the fields of industry and housing. In 1968 investment in industry would exceed 1957 magnitudes by over Rs. 400 million and investment in housing would be over Rs. 300 million in excess of the 1957 figure. The increases in other fields, though not so great in absolute terms, are also considerable. All these represent not merely the stepping up of investment activity visualised by the Plan but also a pattern of development which aims at radically changing the basic character of the Ceylon economy. The change is not only in the direction of industrialisation in the narrow sense but also of providing the overheads of a more modernised economy.

The shift in the pattern of investment—as distinct from the increases in absolute amounts—between 1957 and the end of the Plan period is illustrated by the percentage figures shown above. The most striking feature is the marked rise in the share of industry and power which increases from 15.1 per cent. of total investment in 1957 to 27.3 per cent. in 1968, and the fall in the share of agriculture from 27.4 to 22.5 per cent.

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[1] In some fields, notably agriculture and industry the increases shown here are exaggerated because it was impossible to specify the distribution of the increase in stocks in 1957.

of the total. This again illustrates the basic transformation visualised for the economy. It should be noted that the percentage distribution of investments in 1968 differs from that for the Plan as a whole (i.e. as shown in Table IV). This reflects differences in growth rates envisaged for various sectors of the economy. In particular the industrial programme reflects annual volumes of investments which rise sharply towards the earlier years and which then have a slower rate of increase. The manner in which changes in the pattern of investments, as they affect industry and agriculture, are expected to take place over the Plan is shown in the following table :

TABLE VII

Percentage Shares of Agriculture and Industry in Total Investment (1957–68)

	1957	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Agriculture & Fisheries	27·4	28·7	26·5	27·2	25·3	25·5	24·5	23·9	23·5	22·9	22·5
Industry and Power	15·1	14·3	22·5	25·3	27·6	27·0	27·2	26·6	27·1	27·2	27·3

These percentages reflect the view that while it is desirable to step up the rate of industrialisation immediately it will be necessary to consolidate that advance before major industrialisation will be possible. The Plan aims at expanding the several requirements for industries—power supplies, managerial and technical skills and so on—so that by 1968 the economy would have a substantial capacity for absorbing further investments in this field.

(4) PUBLIC AND PRIVATE SECTORS

The magnitudes discussed so far are national aggregates covering the economy as a whole. They relate to combined totals of investment to be made by both the public and private sectors of the economy. As mentioned in a previous section, however, there is an essential difference in the nature of an overall plan as it relates to the public and private sectors respectively. The investment programmes for the public sector are the direct responsibility of the government which is the operational agency for implementing them. These programmes could thus reflect actual investment decisions that have or would be taken by government. It is true that within the public sectors there are differences in the degree of firmness behind the several individual programmes presented here. Despite these differences, however, the public sector programmes fall into a distinct category from the point of view of planning. The programmes for the private sector are of a different nature. They are essentially in the nature of estimates of the performance which can be expected from this sector given the conditions and opportunities that would prevail over the 10-year period. Since the performance of the private sector can be closely influenced by governmental policies and measures it is implicit that government policy would be directed towards bringing forth this performance.

It is likely that the big increase in development activity within the government sector as envisaged in the Plan would be accompanied by a parallel stepping up of activity in the private sector. It is not planned that government activity would provide all the requirements of the economy. Even the implemention of governmental programmes and projects involves the use of several services and products supplied by the private sector. An expansion in investment activity in this sector is therefore provided for in the Plan.

It should, of course, be clear that the role of the public sector in the effective realisation of the Plan is dominant. It is necessary for the State to ensure that the several measures vital for the transformation of the economy are in fact undertaken. Crucial investments have to be made in several fields—particularly new ones—which are strategic to economic growth. The government must ensure that these are made on a scale and at a pace which measure up to national needs. All this would involve the creation of several new enterprises in the public sector and the expansion of existing ones. It would involve in fact a substantial growth in this sector as a whole not only in absolute but in relative terms as well. Moreover the influence of government policy would obviously not be confined to the public sector. It would embrace the magnitude and direction of investment in the private sector as well. This is indeed implicit in the very concept of planning.

A distribution of the investment totals of the Plan between the government and the private sectors is shown below. The distribution is not inflexible. A division can be made fairly clearly when the investments fall into categories which belong exclusively to one or the other of the sectors. It can also be made where the investments are based on firm and detailed programmes which indicate separately public and private outlays. When these requirements are not satisfied however— and as indicated there are parts of the plan for which this holds—only a rough division is possible. This division could vary as detailed programmes and policies come to be formulated.

The figures presented below are based on a division between investments to be made by or financed by government and investments made or financed by the private sector. This does not, of course, necessarily correspond to a division based on public or private ownership. Government loans and investment subsidies to the private sector are generally included in the investment outlays of government except where they could be attributed to specialised governmental lending agencies. However, the distribution cannot be made with absolute accuracy. In the division which follows the category government embraces both central and local government and also public enterprises. " Non-monetised " investments representing the value of self-help contributions are shown separately.

TABLE VIII

Government and Private Investment by Sectors, 1959–68 (Inclusive)

(Rs. Million)

Sector	*Non-monetized*	*Government*	*Private*	*Total*
Tea	—	156	351	507
Rubber	—	194	217	411
Coconut	—	41	274	315
Specific agricultural crops & animal husbandry	—	321	464	785
Irrigation	110	982	—	1,092
Fisheries	—	208	10	218
Large scale industry	—	1,613	701	2,314
Small scale industry	40	360	—	400
Electricity	—	826	—	826
Transport	100	1,652	194	1,946
Construction	—	90	235	325
Housing	435	908	1,382	2,725
Public Administration	100	926	—	1,026
Other Services	70	100	541	711
	855	8,377	4,369	13,600

The small discrepancy in totals is due to rounding.

(5) OUTPUT

The objectives of the Plan in terms of the production of goods and services may now be presented. The investment programmes presented in the previous section, combined with other ancillary policies, are aimed at providing concrete results in terms of increases in output over the several fields of the economy. The following table (showing Gross Domestic Production at factor cost) summarises these results. It compares values of output (of goods and services) of the main sectors of the economy to be attained by 1968 with the values obtaining in 1957. Since the estimates are in constant 1957 prices the increases in value depict, in fact, increases in physical volume.

TABLE IX

Projected Increase in Output (1957 and 68)

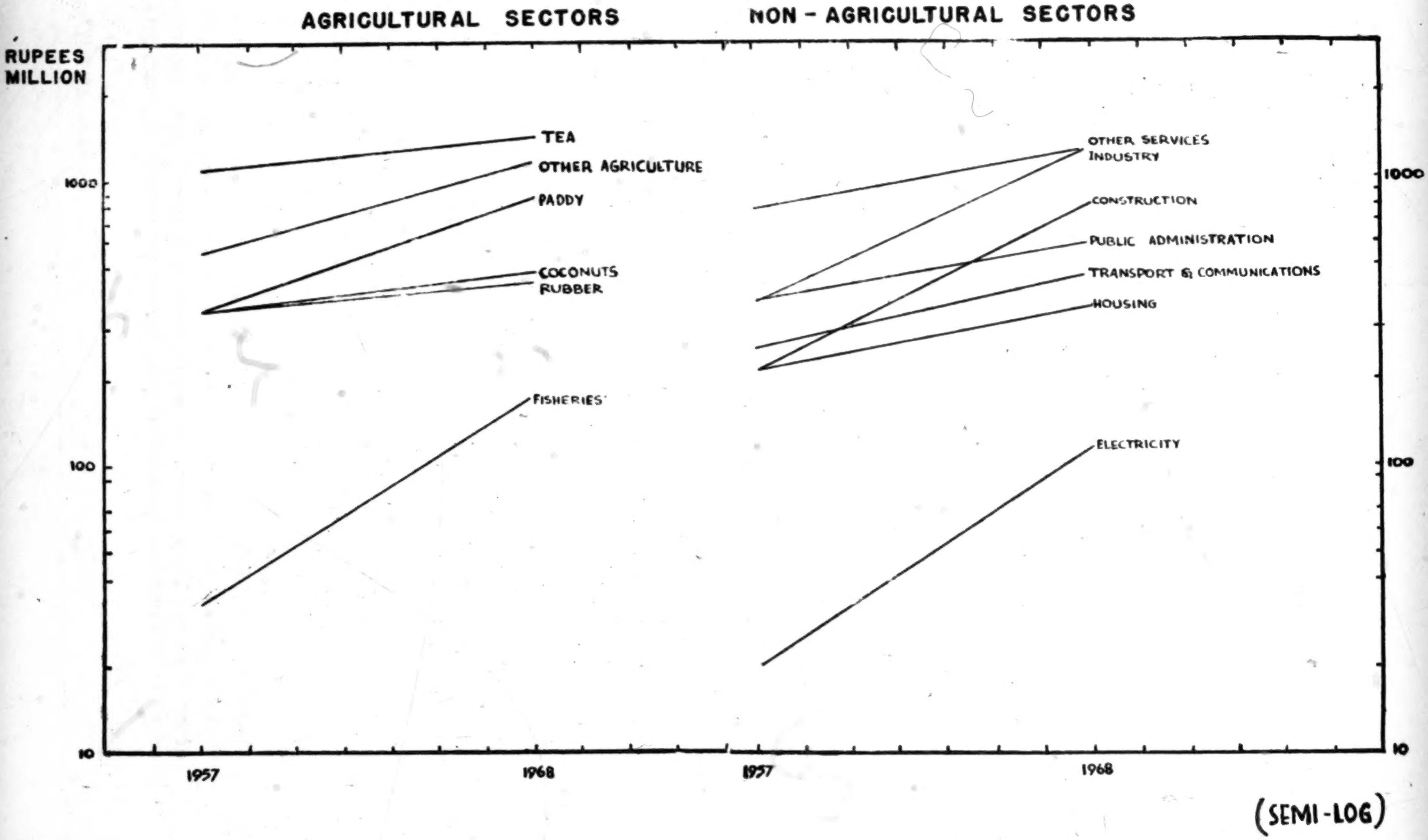
(*Gross Domestic Product at Factor Cost*)
(1957 Prices)

	1957 (*Rs. M.*)	1968 (*Rs. M.*)	*Increase* (*Rs. M.*)	*Per Cent. Increase*
Tea	1,075	1,392	317	29
Rubber	338	453	115	34
Coconut	342	469	127	37
Paddy	350	857	507	145
Other products of Agriculture including Animal Husbandry	565	1,153	588	104
Fisheries	34	176	142	418
Industry	380	1,290	910	239
Construction	214	803	589	257
Electricity	20	120	100	500
Transport and Communications*	258	466	208	81
Housing†	215	360	145	67
Public Administration	385	616	231	60
Other Services	799	1,290	491	61
Total	4,975	9,445	4,470	90

*Excludes transportation of export crops.
†Includes imputed rent of dwellings in the rural sector.

DIAGRAM – V

INCREASE IN OUTPUT 1957 – 1968



In the field of output the highest percentage increases are in power supplies, industry, fisheries, construction, rice and other agricultural products. The percentage increases in output are particularly high in those spheres where rapid expansion is envisaged relative to a low base year production. This is the case for industries, fisheries and power supplies. Although percentage-wise increases depicted for other fields may be comparatively less, the value of additional output expected is still considerable in absolute terms.

The figures above relate to increases in the value of output at constant prices. It is possible in the case of certain major products to translate these magnitudes into targets of physical quantities. This is shown below :—

TABLE X

Selected Targets of Physical Quantities (1957 and 1968)

	1957 *Production*	1968 *Planned Production*	*Per cent increase*
Agriculture :			
Tea (million lb.)	398·0	503·0	26
Rubber (million lb.)	220·0	299·0	36
Coconuts (million nuts)	2,090·0	2,963·0	42
Paddy (million bushels)	31·5	77·0	144
Milk (million pints)	153·0	495·0	224
Meat ('000 cwt.)	253·0	381·0	51
Tobacco (beedi) (million lb.)		3·9	—
Tobacco (cigarette other) (cured leaf)	5·8	10·5	82
Eggs (million)	100·0	197·0	97
Potatoes ('ooo cwts.)	4·0	1,018·0	—
Chillies ('000 cwts.)	282·0	780·0	177
Onions ('000 cwts.)	982·0	1,358·0	38
Coffee (million lb.)	—	1·9	—
Sugar Cane ('000 tons of Sugar)	—	272·0	—
Fish ('000 cwts.)	762·0	3,932·0	416
Industries :			
Cement ('000 tons)	80·0	1,000·0	1,150
Fertiliser ('000 tons)		400·0	—
Sugar ('000 tons)		272·0	—
Electricity (million k.w.h.)	181	1,110·0	513
Houses ('000)	23·0	146·0	535

CAPITAL OUTPUT RATIOS

The following table gives the capital output ratios for the several sectors of the economy. These ratios have been computed by dividing the respective amounts of expansion investment (viz. investment which increases gross domestic product as distinct from replacement investment which is required for maintaining the existing level of gross domestic product) by the corresponding increases in gross domestic product.

TABLE XI

Capital Output Ratios

Tea*	1·25
Rubber*	1·47
Coconuts	1·35
Other Agriculture	1·62
Fisheries	1·49
Industry	2·60
Construction	0·51
Electricity	7·85
Transportation and communications†	6·48
Housing	15·00§
Public Administration‡	4·25
Other Services	1·27
Total	2·60

* Including smallholders.

† Including transportation of export crops.

‡ Including health and education.

§ The high capital output ratio in housing reflects the level of imputed rents in the plan.

It will be noticed that the capital output ratios vary from sector to sector. Some are relatively low, others are high. In general it may be said that sectors with relatively low capital output ratios are mostly, though not always, of a labour intensive type; those with a high capital output ratio are mostly capital intensive. The advantage to be derived from investing in industries with low capital output ratios is that in such industries output and employment can be increased with relatively little capital. The disadvantage is that low capital output ratios are mainly accompanied by increases in wage incomes, which are largely spent on consumption goods so that the surpluses which can be used for further development are relatively low. High capital output ratio industries have as a rule the advantage of being accompanied by high surpluses which can be used for increasing the rate of investment and of development. On the other hand the additional employment created in them is comparatively small.

Too much stress on either of the two types of investment would in the short run result either in creating surpluses which are too small and hence a scaling down of the rate of development or in a failure to provide for a sufficient increase in employment and standards of living. In the plan, therefore, a compromise has been adopted and provisions have been made for an expansion of sectors with a low as well as a high capital output ratio. The capital output ratio for the economy as a whole is 2.6.

THE PATTERN OF STRUCTURAL CHANGE

The structural changes in the economy that would be brought about by the Plan are illustrated by a comparison of the relative shares in Gross Domestic Product of the different sectors in 1957 and 1968. This is shown below :

TABLE XII

Percentage Distribution of Gross Domestic Product (1957 and 1968)

	1957	1968
Tea	21·6	14·7
Rubber	6·8	4·8
Coconut	6·9	5·0
Rice	7·0	9·1
Other agriculture	11·4	12·2
Fisheries	·7	1·9
Manufacturing industry	7·6	13·7
Construction	4·3	8·5
Electricity	·4	1·3
Transportation and communications	5·2	4·9
Housing	4·3	3·8
Public Administration	7·7	6·5
Other services	16·1	13·7
	100·0	100·0

There are two significant structural changes that emerge from these figures. First there is a fall in the share of the export crops in Gross Domestic Product from 35 per cent. to 25 per cent. Although the output of these crops would rise in absolute terms the Plan would reduce significantly Ceylon's traditional dependence on them as sources of Gross Domestic Products. There is at the same time an increase in the relative importance of both rice and other agricultural products. This is a reflection of the emphasis placed on import replacement in this field. The contribution of agriculture as a whole to Gross Domestic Product however falls. Second, there is a considerable rise in the share of manufacturing industry, fisheries, construction and power. In particular the share of industry rises from 7.6 per cent. to 13.7 per cent. of the total—providing a measure of the degree of industrialisation envisaged by the Plan.

(6) THE BALANCE OF PAYMENTS

The implementation of a development programme creates strong tendencies towards increasing imports (and decreasing exports). In the first place, the realisation of the investment programme implies a much larger import of capital goods. In the second place the programme stimulates private consumption through increased employment and incomes. This again creates additional demand for consumer and intermediate goods. Finally, government consumption will rise because of the important role which the government has to play in the implementation of the Plan. All this may result in such an increase in imports that serious deficits in the balance of payments emerge. These in turn lead to diminished foreign assets and may in the end make the implementation of the Plan impossible. The unfavourable course of events can, however, be avoided if the development programme aims to a sufficient degree at expanding import saving production and at increasing exports. In the present Plan several provisions of this kind have been made.

The sections that follow set out the implications of the Plan for the country's balance of payments. Two points must, however, be made at the outset. First, the estimates shown below, as elsewhere in the Plan, are made in terms of constant 1957 prices. This means that they take no account of changes that may be brought about by future fluctuations in the terms of trade or in internal prices. Second, the estimates relate to the end of the Plan period—1968. It should not be assumed that the pattern established for 1968 would necessarily prevail over the intervening years of the Plan. It is possible that in the early period the payments position would be less favourable than in 1968.[1] During this time heavy investments would be made whose benefits would not as yet have appeared.

Traditionally, the merchandise balance of Ceylon shows a surplus while there is a deficit in the services component. Nevertheless, in 1957, used throughout this report as the base year, the balance of payments was unusual. Not only the services component but also the trade balance showed a deficit. This was the combined result of an increase in the volume of imports, a decrease in the volume of exports, and a deterioration in the terms of trade.

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[1] This process may mean that the total balance of payment deficit for the ten year period is somewhat greater than is allowed in the discussion in the financial chapter.

The following table compares the main items of the balance of payments in 1957 with those depicted by the Plan for 1968 :

TABLE XIII

Balance of Payments on Current Account (1957 and 1968)

(Rs. million)

	1957			1968		
	Credit	*Debit*	*Net*	*Credit*	*Debit*	*Net*
1. Merchandise *a*	1,588	1,711	—123	2,128	2,001	123
2. Services	125	215	— 90	181	284	— 107
3. Factor income *b c*	41	93	— 53	41	156	— 115
4. Donations and remittances *c*	36	75	— 40	50	110	— 60
5. Total current account *c*	1,790	2,094	—305	2,400	2,551	— 151

Notes.—(*a*) Merchandise is calculated on a transactions basis from Customs Returns, imports are retained and exports are domestic (i.e., excludes re-exports).

(*b*) Investment income only (wage income is registered in services).

(*c*) Small discrepancies between totals and constituent items are due to rounding.

It should be noted that in matters of definition the table above differs from that published by the Central Bank. In the first place imports and exports of goods are presented not on a cash (or payments) basis but on a transaction basis. Secondly, all imports of merchandise are given at c.i.f. values and all exports at f.o.b. values. This entailed certain adjusting changes in the 1957 figures which the Central Bank publishes on the import and export of selected services. The value of imports and exports of merchandise was taken from the Customs Returns.

It will be seen that the Plan results in the preservation of the traditional structure of the balance of payments : a surplus in the trade balance and a deficit in the services component. To arrive at this result, despite the strong increase in demand for goods which the plan implies, it was necesary to lay much emphasis on the expansion of import-saving production. The following table indicates the increased degree of self-sufficiency which the implementation of the Plan will provide :

TABLE XIV

Degree of Self-sufficiency (1957 and 1968)

	Domestic Production as a percentage of total supplies	
	1957	1968
Agriculture	70·7	89·0
Fisheries	29·8	86·7
Industries	21·2	40·1

It is very important to realise that the main contribution to import-saving would be from agriculture. This is clearly shown in the following table depicting the composition of imports :

TABLE XV

Composition of Imports of Merchandise (1957 and 1968)

(c.i.f. at 1957 prices)

	Value of Imports			
	1957		1968	
	Rs. million	*Per cent.*	*Rs. million*	*Per cent.*
1. Consumer goods—				
(*a*) Agriculture and Fisheries	556	32·5	301	15·0
(*b*) Industry	433	25·3	500	25·0
2. Intermediate goods	566	33·1	750	37·5
3. Capital goods	156	9·1	450	22·5
Total	1,711	100·0	2,001	100·0

Note.—The definitions adopted for classifying consumer, intermediate and capital goods differ from those in estimates referred to in an earlier chapter.

The table above also indicates the basic change which the Plan will bring about in the country's import structure. Whereas in 1957 consumer goods comprised 57.8 per cent. and capital and intermediate goods 42.2 per cent. of the total imports, the corresponding proportions in 1968 would be 40.0 per cent. and 59.5 per cent. To this extent the objectives of devoting an increasing proportion of the country's foreign exchange resources to the importing of capital and intermediate goods is realised.

As for the expansion of merchandise exports, agriculture again makes the main contribution. This is shown in the table below depicting the composition of exports in 1957 and 1968 :

TABLE XVI

Composition of Exports of Merchandise (1957 and 1968)

(f.o.b. at 1957 prices)

	Value of Exports			
Sector	1957	1968	*Increase*	
	Rs. million	*Rs. million*	*Rs. million*	*Per cent.*
Tea	1,021	1,286	265	26
Rubber	300	416	116	39
Coconuts	159	216	57	36
Other agriculture	40	60	20	50
Total of agriculture	1,520	1,978	458	30
Industry	68	150	82	121
	1,588	2,128	540	34

The balance of payments in respect of services is expected to show an increasing deficit. This increase is, however, restrained by the possibility of earning more foreign exchange from shipping and tourism. The implementation of the Plan will require assistance and borrowing from abroad in the form of finance and skills. Increased borrowing from abroad will enlarge the deficit on the item "factor income". Similarly, the attraction of more foreign skills will increase the deficit on the item "donations and remittances" despite an expected increase in foreign grants.

Two very important conclusions emerge from the foregoing discussion. First, it is apparent that from the point of view of the balance of payments the fulfilment of the Plan largely depends on achievements in the agricultural sector. In other words, it would be fatal if agriculture were to fall short of the targets for saving imports and expanding exports as set out in the Plan. The second conclusion relates to the long-term prospect beyond the period of the Plan. It cannot be expected that agriculture would be able to solve the balance of payments problems in the long run. The extent to which agriculture can contribute towards the saving of imports and the increasing of exports is limited. This implies that the contribution of agriculture as expected at present is of a transitional character. In the future, industry would have to make the main contribution towards saving imports and increasing exports. It is, therefore, imperative to use the existing opportunities to establish and expand, as quickly as possible, an industrial sector so that it can in due time compete successfully with foreign industries—not merely in the home market but also abroad.

(7) MANPOWER

The objective of mobilizing Ceylon's growing manpower resources has played an important part in determining both the magnitude and nature of the Plan as presented in the preceding sections. It is now necessary to assess in quantitative terms the extent to which the objective would broadly be realised over the period of the Plan.

It was emphasised earlier that the broad goal was to bring about a relatively full utilization of manpower by the end of the 10-year period. It is likely that in some of the intervening years, whilst the Plan gathers momentum, there will remain an unbalance between the demand for and supply of labour. In addition it should be remembered that the employment results of the plan are not confined to wage jobs. They include the creation of non-wage opportunities for productive employment.

The first step in the drawing up of a manpower budget is an assessment of the resources likely to be available. The study of manpower resources to which reference has been made earlier indicates a total workforce by 1968 of 4,833,000 persons. This, with an estimated workforce in 1957 of 3,508,000 persons, represents an increase of 1,325,000. This increase does not however provide a full measure of the additional manpower resources which would be available for absorption into productive employment. It is necessary to add the unemployed already existing in the past years as well as the under-employed. There are, however, deficiencies in the statistical material which make it difficult to measure accurately the amount which needs to be added in this way. A survey is now in progress which seeks to measure existing unemployment and under-employment. But until its results become available the chief indications of unemployment in the base period are provided by statistics of registrants at the employment exchanges. The number so registered in 1957 was 113,000. But since all unemployed persons do not register themselves and persons already in employment are amongst those who do, this is not a particularly good measure of unemployment.

The absence of the requisite data presents a difficulty. The table presented below shows the distribution of the workforce in 1957 and 1968 between the several sectors of the economy. The distribution of the workforce for 1957 was derived from a combination of sources. These included direct data on employment in some sectors, data on productivity per man in others, and information from the occupational census of 1946 and 1953, the Consumer Finance Survey of 1953 and the Survey of Rural Indebtedness, 1957 adjusted for subsequent changes in output and productivity. The resulting figures are necessarily approximate. Since no alternative figure was available, the allowance for unemployment in the base year corresponds to the registrants figure. To the extent, however, that actual unemployment in 1957 exceeded this number this excess would be contained in the employment figures shown against the several sectors of the economy. In addition these figures include the under-employed as well as the fully employed.

The estimates for 1968 were also made up out of a combination of methods and checks. For some fields they were obtained from actual project estimates of employment. For others they were derived by combining changes in output as depicted by the Plan with expected changes in productivity relative to the base year. It is implied therefore that if some unemployed persons are included in the manpower distribution for the base year a corresponding number of unemployed would also be included in the distribution for 1968—unless the increase in productivity per person turns out to be less than expected. This means in effect that the Plan may have to be re-appraised and if necessary revised in the light of better information regarding the prevailing magnitude of unemployment.

These are similar problems connected with under-employment. Although the full extent of under-employment now prevailing is not known this is a common feature in such fields as peasant agriculture and service occupations. The Plan aims at bringing about a substantial reduction in under-employment, through the creation of more work in both the rural and urban areas. It provides not only for an increase in the numbers at work in various sectors of the economy but also for an increase in productivity per person. The increase in productivity is particularly great in those fields where under-employment is prevalent. However, increases in productivity provide only a partial indication of the reduction in under-employment. Although these increases depend on increases in effort—they are also the result of such factors as mechanisation, the adoption of better methods, the application of fertiliser and so on. Hence although the Plan aims at and will bring about a substantial reduction in under-employment (in addition to absorbing large numbers) it is not possible to measure precisely the extent of this reduction.

Part-time work on different activities raises further problems. For instance some of the labour engaged in cottage industries, service occupations, and in construction work may also be agriculturists. If these numbers are included against each of the fields of activity an element of double counting would result. On the other hand if they are classified against the primary activity only, the relationship between labour and output in each field—in other words the productivity estimates—would be inaccurately depicted. It has not been possible in the tables presented here to make allowance for conceptional refinements of this kind. Since estimates of changes in productivity, though imperfect, have been used as a check in framing the manpower estimates—it would be appropriate to interpret the figures below as depicting the equivalent of full-time work in each field. The prevalance, in fact, of part-time work should, however, be borne in mind.

The distribution of the workforce in 1957 and 1968 is shown below. The numbers depicted against each sector of the economy are inclusive of all persons at work in these sectors, covering both skilled and unskilled personnel.

TABLE XVII

Distribution of Workforce (1957 and 1968)

('000)

	1957	*Per cent. of total*	1968	*Per cent. of total*	*Increase* 1957–68	*Per cent increase* 1957–68
Tea (Estates only)	539	15·4	678	14·0	139	25·8
Rubber (Estates only)	194	5·5	200	4·1	6	3·1
Coconuts	82	2·3	96	2·0	14	17·1
Total for export crops	815	23·2	974	20·1	159	19·5
Other Agriculture*	1,046	29·8	1,304	27·0	258	24·7
Total Agriculture	1,861	53·0	2,278	47·1	417	22·4
Fisheries	79	2·3	92	1·9	13	16·4
Total Agriculture and Fisheries	1,940	55·3	2,370	49·0	430	22·2
Industries—						
Large and Medium Scale Small and Cottage	291	8·3	528	10·9	237	81·4
Construction	105	3·0	316	6·5	211	201·0
Electricity	4	0·1	7	0·1	3	75·0
Transport and Communications	155	4·4	209	4·3	54	34·8
Public Administration	181	5·2	290	6·0	109	60·2
Other Services	719	20·5	1,065	22·0	346	48·1
Total	3,395	96·8	4,785	99·0	1,390	40·9
Unemployed	113	3·2	48	1·0	—65	—57·5
GRAND TOTAL	3,508	100·0	4,833	100·0	1,325	37·8

* Including employment on tea and rubber small holdings.

The manpower goals of the Plan as set out above aim at absorbing 1,390,000 persons by 1968. This figure comprises not only the whole of the addition to the workforce over the period 1957 to 1968 but also a portion of the numbers unemployed in the base period. A small extent (1.0 per cent. of the total workforce) of unemployment is allowed for at the end of the Plan period. This takes account of frictional employment which is bound to occur in a rapidly growing economy. The turnover of labour on constructional work in particular will be high as old projects reach completion and new ones get started.

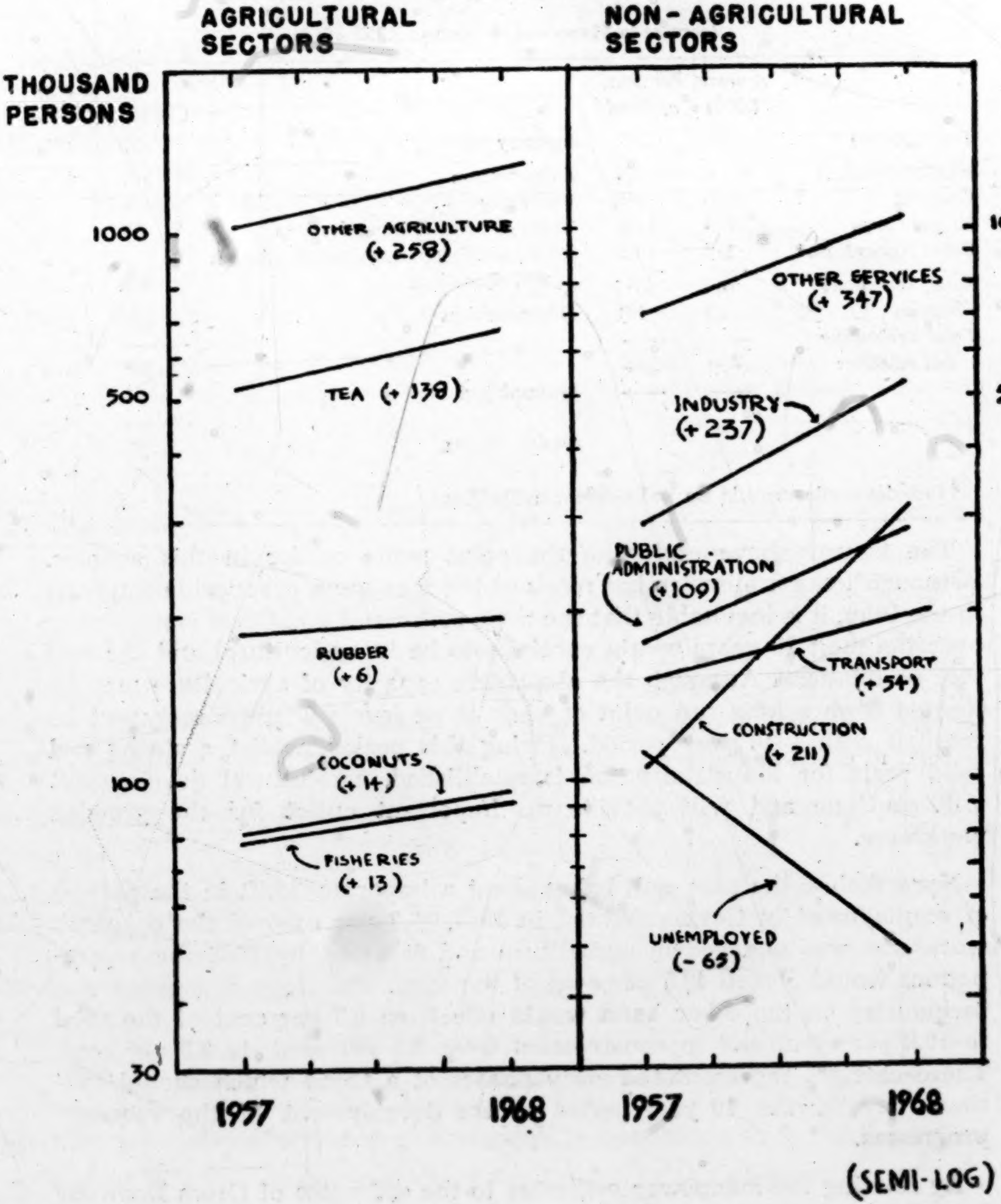
The channels of absorption of the future workforce reflect the priorities and directions of development postulated by the Plan. The highest *rate of growth* for any sector is in construction (201.0 per cent over the period or 10.5 per cent. per annum). This is appropriate since a rapid rate of construction of capital assets is central to the very concept of development. Construction here covers constructional activity of all kinds—the setting up of factories, the building of irrigation dams and power projects, land development work, the construction of ports and harbours, the building of houses, hospitals, schools, roads and so on. Employment in this field is of a revolving kind. It differs from employment in the current operation of completed projects—factories, farms, hospitals, &c.,—which is sometimes described as permanent or sedimented employment. A rising volume of constructional employment implies, with given techniques, a rising rate of construction. In the context of the progressive increase in investment envisaged by the Plan there would be an annual increase in the numbers employed in constructional work. This increase will be higher with the increased use of labour intensive techniques of construction.

Next to construction, the highest rates of growth are in industry and power (increases of 81.4 per cent. and 75 per cent. respectively). This again reflects the basic character of the Plan itself. However, the major portion of the increase in employment in this field will be due to the expansion of small scale and cottage industries. The contribution to employment from the more capital intensive large and medium scale industries is naturally small. The rate of expansion in employment in the field of public administration is relatively high (60.2 per cent. increase). This includes the increased numbers employed in administrative activities as well as in education and health. The growth in these fields corresponds to the expansion in investment envisaged in the Plan. The increase in agriculture and fisheries is 22.4 per cent. In agriculture the relative expansion is higher in rice farming and other crops for domestic use (24.7 per cent.) than in the export groups (19.5 per cent.). In the case of fisheries the (16.4 per cent.) increase in employment is small in terms of the large development programme on account of the new emphasis on mechanisation.

The analysis above relates to rates of expansion in employment. In terms of increases in the absolute numbers employed, however,

DIAGRAM - VI

WORKFORCE IN 1957 AND 1968



a different picture would emerge. Of the additional workforce to be employed by 1968, 430,000 would be absorbed in agriculture (including plantation crops) and fisheries, 346,000 in 'other services', 237,000 in industry and 211,000 in construction. The relative contribution of each sector to the increase in employment is shown below.

TABLE XVIII

Increase in Manpower by Sectors (1957–1968)

	Amount ('000)	*Per cent. of Total*		*Amount* ('000)	*Per cent of Tota*
Tea (Estates)	139	10·5	Industry	237	17·9
Rubber (Estates)	6	0·5	Construction	211	15·9
Coconut	14	1·1	Electricity	3	0·2
Export Crops	159	12·0	Transport and Communications	54	4·1
Other Agriculture *	258	19·5	Public Administration (including health and education)	109	8·2
Total Agriculture	417	31·5			
Fisheries	13	1·0	Other Services	346	26·1
Total Agriculture and Fisheries	430	32·5		1,390	104·9
			Unemployed	—65	— 4·9
			GRAND TOTAL	1,325	100·00

* Includes employment in tea and rubber smallholdings.

The figures above underline the point made earlier in this chapter. Although industrialisation has received the maximum practicable emphasis in the Plan, it is inevitable that the main sources of additional employment over the next 10 years would continue to be in agricultural and the service occupations. Although the absorptive capacity of agriculture may be limited from a long run point of view these levels would clearly not be reached with a 10 year period. During this period, whilst a strong and solid basis for industrialisation is established, agricultural development will continue and will provide an important outlet for the growing workforce.

Nevertheless the plan will bring about a important shift in the pattern of employment in Ceylon. Whilst in 1957, 55.3 per cent of the country's workforce was engaged in agriculture and fisheries, by 1968 these occupations would absorb 49.0 per cent of the total. The share of employment in industry on the other hand would rise from 8.3 per cent of the total to 10.9 per cent. and in construction from 3.0 per cent. to 6.5 per cent. These changes represent the early phases of a trend which should continue beyond the 10 year period as the development of the economy progresses.

By relating the manpower estimates to the estimates of Gross Domestic Product it is possible to indicate the changes in G. D. P. per person implied by the Plan. The substantial increases in output provided for in the Plan will be realised partly by the employment of additional numbers and partly by changes in productivity per person. Changes in productivity will come about through the mechanisation, the adoption of more scientific methods of production, and through harder work itself. The table below indicates the extent to which gross domestic product per worker will change according to the Plan between 1957 and 1968.

TABLE XIX

Changes in Gross Domestic Product per Man (1957–1968)

	Gross Domestic Product (1957) Rs. million	*G. D. P. per worker (1957) Rs. million*	*Gross Domestic Product (1968) Rs. million*	*G. D. P. per worker (1968) Rs. million*	*Index of G. D. P. per worker*
	(1)	(2)	(3)	(4)	(4 ÷ 2 × 100)
Tea (Estates only)	1,075	1,929	1,392	1,948	*101
Rubber (Estates only)	338	1,301	453	1,702	131
Coconut	342	4,171	469	4,885	117
Other Agriculture	915	875	2,010	1,541	176
Fisheries	34	430	176	1,913	445
Industry	380	1,306	1,290	2,443	187
Construction	214	2,038	803	2,541	125
Electricity	20	5,000	120	17,143	343
Transport and Communications	285	2,690	466	3,228	120
Housing	215	—	360	—	—
Public Administration	385	2,127	616	2,124	100
Other Services	799	1,111	1,290	1,211	109
All Sectors	4,975	1,465	9,445	1,974	135

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* If labour engaged in replanting is excluded the index becomes 117

The estimates of manpower also make it possible to indicate the relationship between investment and employment in the different sectors of the economy. The capital cost of providing permanent employment for a person varies between different spheres of activity. This cost is naturally higher in those fields where employment requires substantial capital equipment or other types of investment. This is reflected in the table below :—

TABLE XX

Investment per Worker * (1957—1968)

	Rs.
Tea	2,600
Rubber	13,700
Coconut	14,300
Other Agriculture	6,800
Fisheries	16,300
Industry	10,000
Construction	1,400
Electricity	262,000
Transport and Communications	30,900
Housing	—
Public Administration (*a*)	9,000
Other Services	1,800

(*a*) Includes Health and Education.

* Refers to Expansion investment i. e. gross investment less replacement.

It is important to emphasise that the investment figures above are confined to investments falling exclusively within the field of activity in which a person is employed. Thus investment in industry for example relates only to investment in factories and equipment and not to ancillary investments for say the housing of the workers. Similarly investments in agriculture would exclude colonists housing, roads and so on which are classified elsewhere. In other words, for each sector the figures relate to the direct and not the indirect investments, needed to employ an additional person. It is only the overall figure which shows the relationship between investment and output for the plan as a whole.

The figures above also ignore the time lag between investment and employment. The employment benefits from. investments made in the later years of the Plan are not realised in full within the Plan period. On the other hand, the employment benefits of pre 1959 investments which mature within the Plan period are shown here. Since the rate of investment increases progressively the effect of ignoring such time lags is to overstate somewhat the capital costs of providing an additional unit of employment.

The manpower goals, it must be emphasised again, are approximations. They cover all types of skills and include both wage and non-wage jobs. They refer to avenues of employment in both the public and the private sectors and to opportunities of self employment. Given the rates and directions of development postulated by the Plan, these goals should broadly be capable of realisation. They do measure up to the size of the employment problem which Ceylon would be faced with over the next 10 years. If the Plan is successfully implemented it would, therefore, yield rich dividends and bring about a radical change in the basic economic situation of the country. The realisation of the manpower goals implies, however, that steps will be taken to bring about a balance between the supply and demand for various types of skills. This involves, as has been said before, not merely schemes for technical and vocational training but a re-orientation of the general educational system itself. There must clearly be no inconsistency between the opportunities for productive employment which development creates and the pattern of work preferences as it emerges out of the social and educational system.

Section III—Summary of Programmes

The specific programmes for the major sectors of the economy are presented in detail in Part II. Only a bare summary will be attempted here.

AGRICULTURE

The significance of agriculture in the general pattern of development has already been discussed. Broadly the Plan aims at increasing the contribution of agriculture (other than fisheries) to the gross domestic product of Ceylon from Rs. 2,670 million in the base year to Rs. 4,324 million by 1968—an increase of Rs. 1,654 million or 62 per cent. In addition to the contribution to gross output, the programme for agriculture is expected to contribute substantially towards strengthening the country's balance of payments position—through both earning and saving foreign exchange—and towards absorbing the increasing workforce.

The programme for the staple agricultural export crops aims at the replanting and rehabilitation of substantial portions of the acreage devoted to these products. Thus by 1968 the plan aims at replanting with new high yielding clones 67,000 acres or 12.0 per cent. of the acreage under tea. The rate of replanting would increase progressively from year to year commencing in 1959. The full impact on output of this programme would not of course be realised within the 10-year period. On the other hand it is expected that additional gains to output would continue to accrue through such other processes as the increased application of fertilisers. In the case of rubber the extent of replanting by 1968 is larger than for tea. This is largely due to the earlier origins of the replanting programme (The scheme has been in operation since 1953). By 1968 the Plan envisages that 352,000 acres or 58.1 per cent. of the total acreage under rubber would have been replanted. For coconuts the Plan aims at increasing output through a variety of measures including the increased application of fertilisers and the replanting of 376,000 acres—approximately 33.3 per cent. of the total acreage.

The Plan provides for the diversion of marginal lands under tea and rubber to other uses—primarily the cultivation of cocoa. At the same time it also provides, in a more limited way, for extending the cultivation of the primary export crops to suitable new lands. The investment goals in the Plan are not confined to rehabilitation and replanting. Provision is also made for investments on machinery and buildings for the tea, rubber and coconut industries which would become necessary with the expansion in output.

Broadly the total value of tea, rubber and coconut output should rise by Rs. 559 million in 1968 as compared to 1957. After allowing for increased domestic consumption this would provide an additional Rs. 438 million in net export earnings.

In the case of agricultural products required domestically, the plan provides for a rigorous programme of import replacements (wherever possible) in terms not merely of present but of 1968 requirements. This involves measures aimed at raising yields of existing crops, the introduction of new crops, and the extension of the area of cultivable land through irrigation and land development. A considerable increase in rice production is a major objective. The Plan aims at more than doubling of present rice output by 1968. A substantial contribution to this increase will accrue through the raising of productivity per acre. This requires a concentrated drive towards this end involving the application of a variety of measures which touch on several aspects of peasant farming. But special emphasis will be placed on such strategic factors—the use of fertilisers is an example—as exert a crucial influence on productivity.

In addition to rice, the Plan aims at providing domestic requirements of a variety of other products. Substantial outlays of foreign exchange are now made on the import of such items as sugar, chillies, onions, tobacco, coffee, eggs and potatoes. It is well within the capacity of Ceylon to stop this drain. The Plan seeks to make the country virtually self sufficient in these items by 1968 or earlier. It also envisages considerable progress in the direction of cotton cultivation during the next 10 years. In addition it provides for expansion in the output of a variety of other domestic agricultural products, such as fruit and vegetables, in accordance with the needs of a rising population.

Special emphasis is placed on animal husbandry and the supply of the country's needs of milk and meat products. This is a field of productive activity which has not flourished in the past, but for which the potential for development is great. The target of the plan is to raise the value of the country's output of milk, meat and other dairy products from Rs. 87 million in 1957 to Rs. 211 million by 1968—an increase of 143 per cent.

The targets of increasing agricultural output in several fields involve the bringing into productive use of lands hitherto uncultivated. This is linked in turn with programmes of irrigation and land development. (Certain basic issues relating to the utilisation of Ceylon's dry zone are discussed in other parts of this report). The Plan aims at bringing approximately 400 thousand acres of new land into productive use over the next 10 years. But it is not only to the cultivation of rice that these extents would be applied. Part of the new acreage would be devoted to other crops and to animal husbandry. In particular, the plan gives priority to sugar over rice in the allocation of land. The programme for irrigation and land development envisages a marked stepping up of the tempo of land development. This involves in turn an expansion in constructional capacities. The programme envisages a series of integrated river basin development schemes which take into account not only irrigation but other significant aspects of land utilisation. In many cases the schemes are multi-purpose in character and would contribute to the country's power supplies. Among the major schemes envisaged in the Plan are the Mahaweli basin development scheme and the Walawe Scheme.

The total contribution to the gross domestic product made by non-export agriculture would rise from Rs. 915 million in 1957 to Rs. 2,010 million in 1968—an increase of Rs. 1,095 million.

FISHERIES

The Plan lays great store by the expansion of fisheries. It seeks, in fact, to meet the country's requirements of fish products by 1968. The programme for fisheries contain a number of inter-dependent measures. These aim at mechanising 625 existing craft, the introduction of 8,250 mechanised boats of a new type, the purchase of 25 trawlers and pelagic tuna boats, the construction and expansion of boat building yards, the construction of 25 fisheries harbours and complementary measures in the field of marketing and distribution. From the point of view of capital cost in relation to output the development of this sector is particularly productive. With the implementation of the programme the fishing industry would become, as indeed it should, an important and efficient part of the total economy.

INDUSTRY

The programme for industry as presented in the Plan falls into two parts. There is first a 'planned' sector comprising in the main certain specific projects which must be undertaken over the next 10 years. These include the expansion of the cement industry to a production capacity of around 1,000,000 tons by 1968. This is to be achieved through the establishment of two additional kilns at Kankesanturai, a three kiln plant using the limestone deposits at Puttalam, as well as a third plant at a later date. The programme provides also for the establishment of a fertiliser plant which is expected to come into operation around 1963 and which would supply Ceylon's growing requirements of fertiliser. Sugar is yet another product whose local production on a large scale is envisaged by the Plan. The programme for sugar aims at an output of 272,000 tons by 1968 based largely on factories to be established at Kantalai, Gal Oya and Walawe. These programmes are linked to programmes for the production of the agricultural raw materials. They also envisage several ancillary activities based on the by-products of the sugar industry. The Plan also provides for considerable expansion in other fields of manufacture. These include textiles, ceramics, chemicals, plywood, leather, salt, bricks and tiles, glass, paper, machine tools and equipment. In addition negotiations are in progress for investments through external financing in the fields of oil refinery, iron and steel, and rubber tyre manufacture.

The planned sector of the industrial programme corresponds broadly, though not rigidly, to industrial projects to be undertaken by Government. These account for the predominant part of the programme as a whole. In addition, the Plan provides for private investment in the production of a varied range of industrial products which form part of the complex of consumer needs. The unplanned sector of the industrial programme does not of course comprise specific projects. It depicts investments and other magnitudes which are broadly consistent with the general scales of expansion provided for in the Plan. These magnitudes are capable of realisation. They do require, however, a number of governmental measures specially designed to stimulate industry. These include policies of tariff protection, the construction of industrial estates, and so on. In addition the entire industrial programme depends vitally on the successful implementation of policies and programmes in other fields,—particularly those relating to the training of technical and managerial skills and the provision of power supplies.

An interesting feature of the industrial programme is that the group of industries which form the core of the planned sector have a common feature. Cement, sugar, fertilisers obtained from cracking oil, and oil refining are all chemical industries or at least dependant on chemical processes. Some of the smaller projects such as salt and its by-products are also within this field. This feature is of some significance in relation to such questions as future specialisation, the possibilities for export, the training of skills, and industrial research.

Many of the industries envisaged in the programmes discussed so far would be generally of a large or medium scale. The Plan provides in addition for a programme of expansion in the field of small scale and cottage industries. The Programme for large and medium scale industries is, relatively speaking capital intensive although it contemplates, particularly in the unplanned sector, a number of plants of a small size. This programme will go a considerable way towards the industrialisation of Ceylon even within the 10-year period and will also lay a firm basis for continued industrial development in the period beyond. Nevertheless large and medium scale industries do not by themselves exhaust the full scope for industrial production. There remain a wide range of products whose production on the basis of small scale and cottage industries are still feasible. An expanded programme in this field will yield valuable results not only in terms of an economy in capital relative to output but even more significantly in terms of employment. Although the size of the programme for large and medium scale industries is considerable the contribution that these would make to employment is relatively small. This is inherent in the nature of the techniques these industries employ. On the other hand, small scale and cottage industries offer employment opportunities. It is therefore appropriate that they should play an important part in a development plan framed in the context of growing manpower resources. The Plan accordingly provides for a rapid rate of expansion in this field based on the acceleration of existing programmes. It is important to emphasis at the same time that such an expansion implies a new concept of small scale and cottage industries involving efficient methods of production. These industries should also be closely geared at several points to demands and supplies arising from more mechanised fields.

In planning for industrialisation it is necessary to recognise the practical difficulties inherent in increasing quickly the rate of industrial development in Ceylon. The programme provides for an immediate stepping up of the level of net investment in large and medium scale industry to an average amount of 150 million rupees a year for the first six years. This amount should be within the capacity of the economy to achieve and also promises significant benefits upon completion. However, the rate is kept roughly constant over each of the six years so as not to jeopardise the immediate upward step by placing too great a strain on scarce technical and administrative skills. After such a period of 'digestion', during which time the long term plans for training and recruitment of new skills should have borne fruit, the plan envisages an increase in the rate of investment in industry. The increase is expected to continue even beyond the Plan period and form the core of development in subsequent decades.

The overall results of the investment plan are reflected in the estimates of outlays. The Plan provides for raising the industrial output of Ceylon from Rs. 380 million in 1957 to Rs. 1,290 million by 1968. These figures excludes the industrial processing of tea, rubber and coconut products which are included within the Plan for the agricultural export sector. The growth rate in the industrial sector is amongst the highest in the Plan. This is consistent with the Plan's basic objectives and the relatively low level of industrialisation now prevailing. If the programme is successfully implemented Ceylon would have taken a great stride forward towards the transformation of its economy.

POWER

The expansion of power supplies is closely linked with the programme for industrialisation. The programme of development has been determined in the light of new projections of demand resulting in the several uses of power. The Plan aims at a rapid rate of growth in power supplies. In terms of magnitudes the targets for power depict an expansion in the country's electricity capacity from 82 MW at present to 382 MW by 1968. These supplies are to be based on the further stages of the Laxapana Scheme, a new project—the Seven Virgins Scheme, and contributions from multipurpose development of the Walawe basin. Further supplies are anticipated at a later period from the Mahaweli Ganga Scheme. A small proportion of the extra capacity will come from thermal stations. Over the period of the Plan certain preparatory measures would be taken in the field of nuclear energy—including the early establishment of an Atomic Energy Authority. It need hardly be emphasised that the programme for power is one of the most important elements in the Plan as a whole. Much depends on its realisation.

TRANSPORT AND COMMUNICATIONS

Programmes in this sphere embrace roads, railways, ports and harbours, aviation, telecommunications and also investments on vehicles and equipment for commercial transport. The expansion in production envisaged in other parts of the Plan will make increasing claims on the transport system of the country. It is important therefore that adequate provision is made for parallel growth in this field. This has been realised in the Plan. It is important to integrate the transport programmes with plans for other sectors of the economy. Such integration as is already possible at this stage has been taken account of in the transport programmes. Thus the programmes for roads and railways are partly linked to the programmes for land development and industrialisation; the programme for ports and harbours has been determined in the light of the expected changes in foreign trade as well as the programme for fisheries. In the case of ports, the Plan provides for expanding the capacity of the Port of Colombo with particular emphasis on increasing warehouse and storage capacity and also in the development of a second harbour. For fisheries it aims at the construction of 36 fisheries harbours to meet the requirements of the fisheries programme. The Plan also makes provision for substantial investments in buses and lorries to measure up to the growing needs of passenger and goods transport. The scope for integration between the transport and other parts of the Plan has not however been exhausted. There still remains much room for further progress in this field.

HOUSING

Housing is one of the biggest single items in the Plan. This reflects the decision, discussed earlier, to give high priority to meeting the entire housing needs of the growing population. The Plan provides for the construction by 1968 of 287,000 houses in the urban and 665,000 houses in the rural areas. These increases are needed not merely to meet the additional requirements of the increasing population but also the existing backlog. The provision for housing measures the total effort that would be made by both the public and the private sectors. However, it is intended that part of the cost of rural housing should be demonetized by being linked up to a self-help programme. Special emphasis must be placed on low cost housing if a solution to the housing problem over the ten years is to remain within the capacity of the country. The provision for housing embraces all residential accommodation including, staff quarters constructed by various agencies of government, colonists cottages, labour lines on plantations and so on. In other words the scale of the programme is related to the total of housing needs.

EDUCATION

The Plan for education over the next ten-years must aim at three objectives. First it must aim at a programme which is consistent with the magnitude of the increase in school going population. Second, it should seek to realise this programme, especially in the field of school buildings, through the adoption of standards and construction methods that are not extravagant. Third, it must orient the entire educational system to the requirements of the Plan, so that there is some consistency between the demand for manpower of various types and the supply.

The investment provisions for education made in the Plan have been framed on the basis of these aims. The Plan seeks to provide educational facilities for 896,000 additional pupils. The investment cost per buildings and equipment per additional pupil (over all types of education) provided for here corresponds with comparable costs in advanced countries. These costs exclude, however, costs of departmental and teachers' quarters which are included in the housing estimates. The Plan provides that a small proportion of capital construction in the field of education covering perhaps rural buildings, play grounds etc. be also brought within the self-help programme. One of the country's major problems in the field of education relates to the divergence between the pattern of work preferences engendered by the educational system and the type of employment opportunities created in the course of development. The Plan requires that educational policies be so oriented as to remove this divergence and also to provide the country's growing needs of technical skills. Some specific programmes for vocational and technical training, have, however, been already included in the Plan.

HEALTH

In the sphere of health the Plan seeks to sustain and improve upon the advance Ceylon has made in recent years. The requirements of a growing population have specially to be taken into account. Both population growth and industrialisation will contribute towards an enhanced rate of urbanisation. This places an added emphasis on environmental sanitation—an emphasis which is reflected in the programme. The Plan provides for a substantial increase in the per capita expenditure on health compared to recent years.

PUBLIC ADMINISTRATION

In the tables on investment totals the figures for public administration relate to investments in buildings, secretariats, and items of equipment required solely for administrative purposes. Defence buildings are included in this category but not defence equipment. In keeping with convention defence equipment is treated as an item of current consumption.

In the tables depicting gross domestic product, however, the value of services in the field of public administration inclusive of health, education and defence services, are shown as a single item. The Plan provides for an increase in the value of these services (at constant prices) of Rs. 231 million between 1957 and 1968 or an increase of 60 per cent. This represents a rate of growth faster than that of population. This excludes, of course, the value of services in public enterprises which enter into industry and other relevant fields of activity. The provision for this head carries some implications of relevance to policy which require elaboration. On the one hand the implication of an accelerated development programme itself will make necessary an increase in government cadres. This is particularly true in education, health, agricultural extension, self-help activities and so on. The expansion provided for in the Plan takes account of these needs. On the other hand, the Plan requires a policy of economy in relation to fields not linked up with the development programmes. This is obviously true of defence services. Unlike many other countries seeking economic development, Ceylon is fortunate in that defence commitments have hitherto imposed relatively limited strains on resources. The Plan assumes that this situation will continue. In respect of other administrative requirements too the Plan calls for policies of restraint. Provision has been made for a moderate amount of expansion in these categories but it is important that the limits be observed. It is important to improve administrative capacities by organisational changes which increase productivity rather than by simply increasing numbers. With the implementation of the Plan the need to step up recruitment to the public services for the purpose of relieving unemployment will disappear altogether. On the contrary, an excessive expansion in this sphere will jeopardise the implementation of the Plan and hence the employment goals through directing financial and other resources away from development. The increases in the value of services in the field of public administration including health and education (Rs. 231 million) provides a measure at constant prices of the extent by which the salaries bill of the government should increase over the period of the Plan on account of the expansion in cadres.

CONSTRUCTION

The increase in the value of services shown under the head construction in the table on gross domestic product is a partial measure of the accelerated rate of development provided for by the Plan. The item covers the income of all those engaged in construction work over all fields of activity—housing, factory buildings, irrigation construction and so on. In accordance with the Plan the value of services in this field will increase from Rs. 214 million in 1957 to Rs. 803 million in 1968—an increase of 275 per cent. These figures measure the future scope for the building and civil engineering industry in Ceylon.

OTHER SERVICES

With the expansion in industry, agriculture, transport, &c., there will inevitably be a parallel expansion in the entire range of service industries in the economy. Trade and commerce, distribution, banking, insurance, hotels, entertainments, personal services, professions and so on fall within this category. Although most of these activities do not call for detailed programmes it is necessary that they be taken account of in an overall plan. Special attention has been given to tourism as a potential source for augmenting Ceylon's earnings of foreign exchange. Given an intensive tourist drive the objective of raising tourist earnings from Rs. 10.3 million in 1957 to Rs. 40 million in 1968 would not appear impracticable. It is envisaged that the value of services in all these fields will increase by Rs. 491 million—from Rs. 799 million in 1957 to Rs. 1,290 million in 1968—a rise of 61 per cent. However with the shift towards a greater production of goods as against services, the Plan depicts a fall in the share of services in the Gross Domestic Product.

THE SELF-HELP PROGRAMME

An extended self-help programme through voluntary societies is an important constituent of the Plan. A target of Rs. 855 million has been set as the value of the self-help contribution over the 10 years as a whole. This forms part of the total planned investment of Rs. 13,600 million. Self-help activities would cover many fields of development. But they are of particular importance in respect of housing, road building, minor irrigation works, schools, dispensaries and communal buildings in rural areas. A recent evaluation has estimated the self-help contribution over the past 8 years at Rs. 100 million. The Plan provides for a substantial stepping up of these activities. This involves a number of organisational measures which would need to be taken at an early date.

CONCLUSION

The description above only provides the barest outline of the development programmes contained in the Plan for the various sectors of the economy. Many aspects of these programmes cannot, of course, be dealt with here. These are covered in the several chapters which form Part 2 of this Report.

APPENDIX TABLE I

EXPENDITURE ON GROSS DOMESTIC PRODUCT 1957 and 1968

(At Constant Prices of 1957)

	Gross Domestic Product at factor cost prices of 1957			*Retained imports c.i.f. at prices of 1957*			*Sales to home market at factors cost and c.i.f. prices of 1957 (a)*			*Domestic exports f.o.b. at prices of 1957*		
1	2	3	4	5	6	7	8	9	10	11	12	13
Sector	1957 *Rs. M.*	*Increase 57–68 per cent.*	1968 *Rs. M.*	1957 *Rs. M.*	*Increase 57–68 per cent.*	1968 *Rs. M.*	1957 *Rs. M.*	*Increase 57–68 per cent.*	1968 *Rs. M.*	1957 *Rs. M.*	*Increase 57–68 per cent.*	1968 *Rs. M.*
1. **Tea**	1,075	29	1,392	—	—	—	54	96	106	1,021	26	1,286
2. **Rbber**	338	34	453	—	—	—	38	−3	37	300	39	416
3. **Coconuts**	342	37	469	—	—	—	183	38	253	159	36	216
4. **Paddy/Rice**	350	145	857	255	−30	178	605	49	903(*b*)	—	—	—
5. **Other Agriculture**	565	104	1,153	221	−57	96	746	59	1,189	40	50	60
6. **Fisheries**	34	418	176	80	−66	27	114	78	203	—	—	—
7. **Industry**	380	239	1,290	1,163	46	1,700	1,475	93	2,840	68	121	150
8. **Construction**	214	275	803	—	—	—	214	275	804	—	—	—
9. **Electricity**	20	500	120	—	—	—	20	500	120	—	—	—
10. **Sub-Total**	3,318	99	6,713	1,719	16	2,001	3,449	87	6,454(*b*)	1,588	34	2,128
10*a*. **Less re-exports not allocated**	—	—	—	8	—	—	8	—	—	—	—	—
11. **Sub-Total all goods**	3,318	99	6,713	1,711	17	2,001	3,441	87	6,454(*b*)	1,588	34	2,128
12. **Transportation and communications**	258(*c*)	81	466(*c*)	55	16	64	297	68	499	16	94	—
13. **Housing**	215(*d*)	67	360(*d*)	—	—	—	215(*d*)	67	360(*d*)	—	—	—
14. **Other Services**	799	61	1,290	160	38	220	850	60	1,360	109	38	150

APPENDIX TABLE I — (*contd.*)

EXPENDITURE ON GROSS DOMESTIC PRODUCT (1957 and 1968)

(At Constant Prices of 1957)

1	*Gross Domestic Product at factor cost prices of 1957*			*Retained imports c.i.f. at prices of 1957*			*Sales to home market at factors cost and c.i.f. prices of 1967 (a)*			*Domestic exports f.o.b. at prices of 1957*		
	2	3	4	5	6	7	8	9	10	11	12	13
Sector	1957	*Increase* 57–68	1968	1957	*Increase* 57–68	1968	1957	*Increase* 17–68	1968	1957	*Increase* 57–68	1968
	Rs. M.	*per cent.*	*Rs. M.*	*Rs. M.*	*per cent.*	*Rs. M.*	*Rs. M.*	*per cent.*	*Rs. M.*	*Rs. M.*	*per cent.*	*Rs. M.*
15. Sub-Total—all services (12, 13, and 14)	1,272	66	116	215	32	284	1,362	63	2,219	125	45	181
16. Sub-Total—goods and services (11+15)	4,590	92	8,829	1,926	19	2,285	4,803	81	8,673(*b*)	1,713	35	2,309
17. Public Administration	385	60	616	—	—	—	385	60	616	—	—	—
18. Grand Total	4,975	90	9,445	1,926	19	2,285	5,188	79	9,289(*b*)	1,713	35	2,309

(*a*) Including increase in stocks.

(*b*) Paddy/rice at average price of 1957.

(*c*) Excluding transportation of export crops.

(*d*) Including imputed rent of dwellings in the rural sector.

CHAPTER 3

FINANCING THE PLAN

Introduction

THE Plan as a whole was drawn up primarily but not wholly in physical terms. This was done partly because financial processes are secondary to the physical, partly because the nature and magnitude of the financial problem can only be assessed in the light of the particular pattern of resource distribution which results from the process of planning in real terms. The essential point, from a financial point of view, is that the process of growth requires a relative shift in the use of resources from consumption purposes to those of investment. Of the increase in income generated during growth a higher proportion has to be devoted to investment than that which obtained at the beginning of the period. In physical terms this means that external earnings have to be devoted to the purchase of machinery, building materials and raw materials rather than to the purchase of finished consumer goods and foodstuffs, and that an increased proportion of domestic output is required to provide food, clothing and shelter for the workers who are engaged in producing and erecting physical capital equipment and structures, which, in the short period, do not add to the current flow of consumer goods. The financial problem inherent in this process is how to ensure that a proportion of present incomes and a proportion of the increased incomes accruing during the process of growth are made available for engaging persons on construction work and for purchasing capital equipment.

One way of describing this process is to say that savings, either voluntary or 'forced', should be increased. While every endeavour must be made to increase voluntary savings—through publicity, incentives and the provision of adequate institutional machinery—it cannot be expected, that in Ceylon voluntary savings will be forthcoming in sufficient volume to meet the needs of the development programme. Even during the period of relatively slow growth during the last decade voluntary savings have been inadequate. A substantial part of gross investment has had to be financed through a government surplus of current revenue over current expenditure, i.e., by one particular method of 'forced' savings. There is no doubt that this process shall have to continue. Indeed given the need to increase the rate of growth and given the planned relative distribution of public and private sector investment an increasing proportion of national income will have to be channelled through a government current surplus.

TABLE 1

Gross Savings and Investment (1950-1957 and 1968*)

(Rs. million)

	Gross Savings					Gross Investment			
	Average 1950–57		1968			*Average* 1950–57		1968	
Item	*Amount*	*Per cent. of National Income*	*Amount*	*Per cent. of National Income*	*Item*	*Amount*	*Per cent. of National Income*	*Amount*	*Per cent. of National Income*
Gross Domestic Savings	633	13·9	1,900	21·4	Gross Domestic Investment	573	12·6	2,050	23·1
Self Help†	—	—	130	1·5	Demonetised Investment	—	—	130	1·5
Depreciation	161	3·5	425	4·8					
Net Domestic Savings :					Government Investment	260	5·7	1,246	14·0
(*a*) Government	222	4·9	772	8·7	Private Investment	313	6·9	674	7·6
(*b*) Private	250	5·5	573	6·4	Net Foreign Lending‡	60	1·3	Nil	Nil
Net Foreign Borrowing	Nil		150	1·7					
Gross Savings	633	13·9	2,050	23·1	Gross Investment	633	13·9	2,050	23·1
National Income	4,570	100·0	8,905	100·0	National Income	4,570	100·0	8,905	100·0

* The 1950–1957 average figures have been derived from the 1957 United Nations *Year Book of National Accounts Statistics* together with the 1957 estimate not published there. These have been somewhat adjusted to conform with data that become available during the preparation of the Plan. The 1968 figures are derived from the Plan (See Appendix II).

† While this item was not given a value in 1950–57 due to the fact that relevant the national income calculations have not taken this process into account, it did in fact take place and for comparability there should be an entry of roughly Rs. 20 million.

‡ This item includes the building up of foreign assets or the repayment of foreign debts.

That this is the case, is illustrated by Table I which shows the savings and investment distribution for the average period 1950-57 and for the final year of the Plan. The 1968 distributions are based on the particular distributions expected to occur in the various sectors—agricultural, industrial, transport, etc.,—as a result of the detailed plans. (For details see Appendix II). This particular comparison is not an ideal one. On the one hand, the process of averaging the years 1950-57 may give a misleading picture and makes comparison with 1968 difficult. On the other hand the economy of Ceylon is subject to violent swings in its balance of payments which are reflected in similar swings in the whole savings and investment process. One such swing in 1957 makes this year, the normal base year for comparative purposes in this report, an even more misleading basis for comparison than does the average presented here. As the 1950-57 statistics are then somewhat unreliable, they should not be taken literally. Despite these limitations however, it does remain true that the proportions of national income that result from these estimates are useful guides to the directions in which changes must occur and of the order of magnitude of those changes. As such the important point to note at this stage is that, given the emphasis on community self-help which forms an important part of the Plan, and given only a moderate rate of foreign lending (instead of the repayment of foreign debts which occured between 1950 and 1957), the changes in the required ratios of net government savings and net private savings do not appear unreasonably high in the light of the increases in income to be generated by the Plan and on the assumption of a reasonable degree of determination on the Government's part in implementing the Plan.

Such simple aggregate patterns of savings distribution are not, however, really very revealing or very convincing. Much more detailed estimates are necessary to carry conviction. Before proceeding to an examination of some of this detail, there are a number of further general points that should be made. Thus it must be emphasised that, while financial considerations are secondary, they are at the same time real. The process of increasing the share of investment in national income, in its financial aspects, involves sacrifices on the part of the general population in the form of consumption outlays foregone in the present for the sake of greater levels of consumption in the future. On the part of the government, which is primarily responsible for ensuring that the required shift take place, there must be a willingness to accept politically unpopular restraints on consumption and incomes and a determination to see that the restraints are enforced. Failure to enforce the financial measures implicit in some form or other in the physical plan can only result in defeating the aims of the plan—either directly or through a process of inflation which would destroy both the pattern of investment and the rate of growth set out in the Plan. Inflation would also have

TABLE II

Finance of Gross Investment (1959–68* inclusive)

(*Rs. Million*)

RECEIPTS			INVESTMENT OUTLAYS	
		Demonetised Sector		
Self-help		855	Demonetised Investment	855
		Government Sector		
Government Current Account Surplus		4661	Government Investment	8337
Government Business Surplus		641		
Depreciation on Government Account		970		
Transfers and Loans :				
(*a*) To Private Sector	−295			
(*b*) From Private Sector	+1085			
Net Transfer Payments		790		
Foreign Aid and Loans		1275		
Government Financial Resources		8337	Government Investment	8337
		Private Sector		
Net private savings	3519		Private Investment	4409
Less Transfers and Loans to Government Sector	−1085			
Balance		2434		
Depreciation		1975		
Private Foreign Investment †		+0		
Private Financial Resources		4409	Private Investment	4409
Total		13601	Total	13601

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* The method of preparation of the above estimates is illustrated in Appendix II.

† It has not been possible to make a realistic estimate of this item. To the extent that it is positive the need for net private savings is diminished.

disastrous effects on the balance of payments position and hence on the investment processes which are dependent on the import of capital goods and raw materials.

The financial process has so far been described in terms of savings. An alternative approach is in terms of the techniques whereby the resources required for investment can be made available either by tapping them at the source (of incomes) or by collecting a proportion of incomes after they have been distributed through taxation. These methods are not, of course, exclusive. A rounded plan for mobilizing savings for development will make use of both methods. On the one hand customs, excise and sales duties can be levied; government and private enterprises can be required to exercise pricing policies which result in surpluses which in turn provide development levies or are re-invested; and government services such as postal, telegraph, railways and ports can be priced and operated in such a manner that, at the very least, they do not result in consumer subsidies through operating losses. On the other hand new income tax measures can be implemented; and development loan funds can be devised.

There is still one more aggregate table which needs to be presented before proceeding to an examination of the details of the financial process. This is Table 2 which presents the aggregate investment expenditures for the ten-year plan period and which relates these expenditures to the broad fields of savings whereby it is expected that they will be financed. This table also indicates some of the broad financial inter-relationships between the government and private sectors. In interpreting the financial side of this balance it must be remembered that the particular amounts chosen are somewhat arbitrary. Thus if it should be thought that the volume foreign and/or domestic borrowing should be greater or less than the magnitudes adopted here it must be remembered that the actual figures are partly illustrative. If the volumes of such loans are less this does not mean that the physical plan will fail. All it means is that voluntary personal savings must be increased or, more likely, that the government must increase the current revenue surplus. Similarly, if greater volumes of loan funds should in fact be obtained the need for forced savings by the government sector will be reduced. All that can be claimed for the particular figures chosen is that they are reasonable estimates of the magnitudes concerned in the light of past performance and in terms of the income growth and institutional developments which are essential features of the plan as a whole.

Government Finance

THE GOVERNMENT BUDGET—A 1968 ESTIMATE

Considerably more illumination can be thrown on the nature of the financial processes by a more detailed examination of Table 3 which presents an estimated Government budget for 1968. It must be emphasised, however, that once again the particular figures used are illustrative only. They are meant to clarify policy issues not to reflect actual decisions. It should nevertheless be clear that the magnitudes depicted are not just random numbers. As is explained in some detail in Appendix I, considerable thought has been given to making the estimate of individual items as realistic as possible.

Generally speaking the table has been drawn up on two major assumptions. First, that the average experience 1956-58 broadly represents the current structure of revenue receipts. Second, that the physical targets of the plan have been realised and that real income, output, &c., have expanded in the manner and to the extent described elsewhere in this report. Given these two assumptions it is not unreasonable to accept the further assumption that current government revenues will increase more or less in proportion with the changes in output, income, &c.

The capital items in the budget shown in the table are either derived from the physical plan (e.g., depreciation and the foreign aid or borrowing component of the balance of payments) or based on assumptions described in more detail below or in Appendix I. There is one other point to be noted. For purposes of simplification and exposition the operating accounts of the major business or semi-business government undertakings or services (The Postal Department, Railway Department, Port Commission and Department of Government Electrical Undertakings) have been excluded from both sides of the current account. There are two exceptions —the expected business surplus by the Electricity Department in 1968 and the subsidy payment in the base period representing the net loss borne by the government in carrying out this group of services. The capital requirements of all these departments and services and the financial provisions for those requirements are, of course, included in the table.

What then are the policy issues illuminated by this table? The first point which should be observed is that, viewed in its financial aspects, the Plan as a whole does not necessarily imply insuperable financial obstacles. The Government budget for the final year of the Plan when viewed against the background of recent budgetary experience and when due allowance is made for the national economic growth made possible by the implementation of the plan, is of not unreasonable magnitude. Viewed in the worst possible light, given the estimating techniques employed in framing the figures, i.e., by assuming no increase in rates of taxes and allowing for the maintenance of the present high rates of subsidy and business losses, the expected budgetary deficit which has to be met out of revenue or by loans is only of the order of 20 per cent of expected 1968 expenditure outlays. If subsidies and business losses can be eliminated, the new taxation required to permit the very much higher planned tenth

TABLE III

Government Budget 1968* (i)

Revenue

	Average 1956–58		1968	
	Amount	Per cent.	Amount	Per cent.
Revenue Account				
1. Sales of Services and Receipts of Business Enterprises	38	2·8	65	2·4
2. Present taxes on Income and Profits	279	20·2	450	16·7
3. Death Duties	5	·4	10	·4
4. Customs Duties	619	44·9	775	28·7
(*a*) Export	324		415	
(*b*) Import	295		360	
5. Excise and Salt taxes	81	5·9	130	4·8
6. Income from property	20	1·4	190	7·0
(*a*) Government Agencies	2		4	
(*b*) Other	18		29	
(*c*) Additional Housing			6	
(*d*) Business surpluses			151	
7. Other revenue and Transfer Payments	66	4·8	110	4·1
8. Sales tax on sugar	76	5·5	120	4·5
9. Balance to be met by new taxation or higher rates of borrowing			298	11·0
10. Total Current Revenue	1,184	85·9	2,148	79·6
Other Receipts				
11. Capital Transfers			48	1·8
12. Depreciation Charges			155	5·7
13. Grants and Foreign Borrowing	31	2·2	150	5·5
14. Net Domestic borrowing	122	8·9	200	7·4
(*a*) Market	30		150	
(*b*) Administrative (Note Issue)	92		50	
15. Changes in cash balances	41	3·0		
16. Total Capital Receipts	194	14·1	553	20·4
17. Total Receipts	1,378	100·0	2,701	100·0

Expenditure

	Average 1956–58		1968	
	Amount	Per cent.	Amount	Per cent.
18. *Consumption*	589	42·7	920	34·0
Transfer Payments				
19. Subsidies—Food	172	12·6	Nil	
20. Subsidies—Business	29	2·1	Nil	
21. Interest	36	2·6	140	5·2
22. Pensions	67	4·8	250	9·3
23. Direct Relief	34	2·5	40	1·5
24. Others	10	·7	20	·7
25. Grants Local Government	26	1·9	40	1·5
26. Total Transfer Payments	374	27·2	490	18·2
27. Total Current Expenditure	963	69·9	1,410	52·2
Capital Account				
28. Investment	374	27·2	1,246	46·7
29. Capital Transfers	15	1·0	45	1·1
(*a*) Acquisition Financial Assets	5	15		
(*b*) Acquisition land grants, &c.	10	30		
30. Total Capital Expenditure	389	28·2	1,291	47·8
31. Statistical Adjustment	26	1·9		
32. Total Payments	1,378	100·0	2,701	100·0

TABLE III—*(contd.)*

Government Budget 1968 (ii)*†

Additional Taxation Required to meet Deficit

(Rs. million)

REVENUE		EXPENDITURE	
New Income and Commodity Taxes	223	Balance of Revenue required (Item 9—Table 3, Part I)	298
New Excise Taxes	75		
	298		298

Government Budget 1968 (iii)*†

Further Additional Taxes to meet Subsidies at Existing Rates

Extra Taxes to be levied	310	Expected Subsidy Payments—	
		Food	260
		Business Operations	50
	310		310

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* Detailed comment on the figures used here, the definition of items of revenue and expenditure and details of the method of calculation are to be found in Appendix I.

† Comment on the figures used here is contained in Appendix I.

year levels of expenditure being financed without causing inflationary pressures is only of the order of 10 per cent. To raise additional revenue of this order, still given the achievement of the Plan, would impose no great strains.

THE NEED FOR ADDITIONAL REVENUE

This must not be taken to mean however that the achievement of the plan, does not involve sacrifices in both real and financial terms. The additional government revenue needed has somehow to be raised. This means more taxation—either through higher rates on existing taxes or through the introduction of new taxes. The process of development means real abstinence from consumption. The significance of this in the sphere of government finance is extra taxation. This is unpleasant but has to be faced if the benefits of growth in terms of higher incomes and greater employment are to be obtained.

It should be noted that in reaching this conclusion on the basis of the arithmetic of the 1968 Budget considerable weight has been given to non-tax sources of revenue. As has been argued elsewhere, notably in Chapter 1 and 4 and in the chapters on Industry and Electricity, the financing process can be considerably eased, by the creation and retention for reinvestment of business surpluses (item 6*d* in the table). Substantial relief from taxation because of this technique has been taken into account before estimating the net tax burden (item 9). Allowance has also been made, as will be discussed in more detail below, for substantial programmes of domestic loan raising (item 14*a*) and foreign aid and borrowing (item 13). These, however, whatever their actual scale in the tenth year cannot, and should not, be expected to eliminate the need for extra taxation.

COMMODITY VERSUS INCOME TAXES

If extra taxation is required how can it be raised? Broadly speaking there are two types of taxes which may be employed—taxes on incomes and taxes on turnover or commodities. These latter types of taxes can, of course, take a variety of forms—either export or import duties, excise taxes, or purchases taxes. The choice between these two main forms of taxation depends on a variety of considerations: relative incidence at different levels of income, relative incidence on different types of consumers, relative administrative convenience, and relative freedom from political pressures. For these reasons it is obviously inappropriate at this stage to advocate the implementation of particular measures. It is appropriate, however, to draw attention to some of the advantages and disadvantages of the two major types of taxation measures.

For the government at least there is a good deal to be said for commodity taxes in terms of their administrative convenience since a considerable part of the administrative cost of collection of some of them can be passed on to the private sector. This is true of sales or purchases taxes but is only fully the case in well developed market economies. In Ceylon where the market sector is much less widespread it may well be that the government would have to take a more active role in wholesaling so as to ensure a reasonably high degree of collection for this type of tax. But in this event the administrative costs for the government as a whole could not be reduced substantially by passing them on to the private sector.

If there is dependence on a relatively few items of commodity tax, there may develop strong political pressures against them which could result in their becoming an unstable source of revenue. If a general system of commodity tax is employed however no particular political pressures need be taken into account. One common theoretical objection to commodity taxes is that by their very nature they tend to result in a regressive incidence of taxation on the population generally. In fact this is not necessarily the case if a system of commodity taxes and not any one commodity tax is under consideration. If accurate information is available about marginal propensities to consume at different levels of income it is theoretically possible to devise a system of commodity taxes—a system in which high rates apply to goods consumed in relatively large amounts by the rich and low rates to goods consumed in relatively large amounts to the poor —which is not regressive in tendency. Against this however there is the difficulty that, in Ceylon, it might not be practicable to administer such a complicated system. A further advantage of a system of commodity taxes is that it is a technique of tapping the economic surpluses potentially available for re-investment which could reduce the level of book-profits of business enterprises. In so doing it can result in a substantial reduction in the pressures of workers and consumers for a share in the growing real economic surplus.

It should be understood of course that the increases in commodity taxes contemplated here are additional to the increased yield on existing taxes of this type that may be expected to accrue from the increased incomes and employment implicit in the Plan. Thus in Table 3, Part I the increased yield from items 4, 5 and 8 does not represent an increase in the rate of existing taxes or the imposition of commodity taxes on goods other than those already being taxed. Specific new taxes are only introduced in Part II which measures the minimum budget deficit given existing rates of tax. Here the bulk of the extra revenue has not been specified. A portion of it, however, has been. This item "New Excise Taxes" has been separately estimated on the assumption that it represents, in a sense, a continuation of the existing rates of customs duty on existing commodities. It is a rough measure of the loss of customs revenue which may be expected from the process of import replacement. Once domestic production of such items as sugar, cement and fertilisers gets under way the general revenue will lose important sources of income unless excise taxes equivalent, more or less, to the existing customs duties, are levied. To the extent that the rates of duty may be lower than existing ones the particular amount estimated here may be overstated.

The basic advantage of a system of commodity taxes is that it tends to reduce general awareness of the rates of tax actually being imposed. The basic advantage of income tax is that it brings to the fore the burden of taxation. It will be argued in a moment that, for the Plan to be achieved, it is necessary that the population as a whole must be taxed. Is it or is it not better that the people be openly aware that the implementation of the plan can only be realised at the cost of increased taxation? This is basically a political judgment which has to be made before policy recommendations can be made about the form in which new taxes should be imposed.

For the full implications of the factors affecting that judgment to be realised it must be understood that the planned development cannot be financed solely by increasing rates of taxation on the rich, certainly not if the rich are thought of as the present population of income tax payers or even as the increase in that population which might be expected to occur in the light of planned income growth and expected population changes. Undoubtedly the rich should be required to make an extra contribution to finance the development required by the plan. Their total contribution should be more than proportionate, in terms of their incomes, than will be the contribution required by the poor. Indeed, recent changes in the tax structure have been introduced in order to ensure this (The increased tax yield resulting from this has not been included in Table III because of difficulties in estimation of the yield. See, however, Appendix I). Nevertheless, there is a limit to the taxable capacity of the rich which is set by the need to maintain incentives and by the necessity, in a mixed economy, that they make a substantial contribution to net savings. In the extreme case, ignoring reality, if all the income of the present income tax payers was taxed away there would still remain a financial deficit in the 1968 Budget modified by this assumption.

If it is the case that the present non-income taxpayers have to contribute to the cost of development and if it is decided that they do so, partially at least, through income taxes what does this imply for the structure of income taxes ? If it is granted that one of the virtues of the income tax is that it makes people conscious of the necessary costs of development then, as the people as a whole are to share in the benefits of development and as the poorer people are expected to benefit by the very nature of the plan more than proportionately to the rest, considerations of equity and public consciousness of costs would indicate that the aim of budget policy should be to include all income earners in the income tax net. In practice this could be taken to mean that the objective should be that all income earners receiving 100 rupees a month or more should be required to submit income tax returns. As family allowances, provident fund contributions, &c., would be permissible deductions the level of income at which income tax would actually become payable would of course be significantly higher than 100 rupees a month. The essential point is that while the people of Ceylon have achieved the freedom of universal suffrage, they will also have to realise, if development is to be achieved, that there is a universal cost to be borne. In so far as a minimum income is a right, considerations of equity would suggest that a minimum liability to income tax is the corresponding responsibility.

There is no doubt that such a system of "Universal Suffrage" income tax would involve considerable administrative difficulties if applied immediately. There is however a good case for believing, as has just been argued, that a universal income tax may well be one of the long-term aims of government financial policy. In the short-term what could be contemplated would be the introduction of such a policy in a series of steps, i.e., a planned lowering of the existing exemption limit. The length of time between the steps should not moreover be simply a matter of administrative convenience. It may be argued that, as the minimum level of liability is reduced, the marginal increment of realised income tax yielded will be progressively smaller. This is true but is not necessarily damaging for three reasons. First the whole process is thought of partially in terms of training in the responsibilities of citizenship which is a cost which the state should be prepared to meet. Secondly the introduction of universal income tax should be regarded as occurring against a background of long-term rising real incomes. The cost of training in the habit of income tax is expected to earn fruits in subsequent years from the average rise in real incomes which will partly be made possible by the revenues which will accrue almost automatically once there is general acceptance of universal income tax. Thirdly it is not expected that there would be any net yield at the bottom of the range. The bulk of the yield from the lowering of the exemption limit would be obtained from the people earning substantially more than this.

An alternative method of making a general charge on the income of the people would be to introduce a small compulsory development levy which would be a charge against incomes, which would accrue in a Development Fund and which would be ultimately repayable to employees with interest in the form of retirement pensions. This would naturally be more popular politically than universal income tax (at least until the stage is reached under progressive lowering of the income tax exemption limit whereby the majority of the people were income tax payers, after which date it would presumably be politically popular to continue to lower the limit). The major difficulty behind such a scheme, which is similar in intention to the Provident Fund, but which is meant as a financial aid to development, is an administrative one, namely, how can it be made to operate in an economy where the largest single group of people are more or less self-employed peasants ? If a solution can be found for this administrative problem there is a great deal to be said for this type of scheme. One possible administrative technique to meet this difficulty would be to enforce a levy through the Guaranteed Price Scheme.

There is one other source of current revenue that should be mentioned, namely, the sale of services by the Government which enter the budget in item 1. The services mostly concerned, which at present are either provided free or given at a nominal charge, are health and education. In recent years there has been a pronounced tendency for current government expenditures to increase at a faster rate than current revenues. Two of the main reasons, but by no means the only ones, why this situation has been developing have been the increased rate of spending by the health and education departments. It may well be the case that these services are vital and should be continued to be given freely or at only nominal rates. It may also be the case, given the expected financial claims on the government reserves, that some halt to this increased rate of spending may have to be called, or alternatively that it may now be an appropriate time to alter the price at which these services are offered. Whatever the outcome of this decision the important point here is that the cost of rendering these services should be recognized and given due weight before arriving at a final verdict.

RESTRAINTS ON EXPENDITURE

Financial balance can be achieved not only by increasing revenue but by cutting expenditure. As, however, under the plan there is a substantial increase in the real volume of work to be performed by an increased number of Government employees there is little chance of reducing item 18 as estimated in Table 3 I. It should be noted, however, that while this item makes some allowance for an increase in real incomes by Government employees, the increase is not large. The implication of this assumption is that the Government must exercise a policy of wage restraint in relation to its own employees. This is so, partly because it will be one way in which they can be expected to contribute to the general success of the Plan, and partly because failure to keep to this policy aim could result directly (and indirectly through increased wage claims on the private sector) in inflationary pressures and subsequent distortions of the whole investment programme.

On the other hand there is no necessary reason for an increased rate of spending on transfer payments as a whole (Item 26). Where there are necessary reasons for increased transfer payments, e.g., in the case of interest which reflects the domestic loan raising programme to be discussed below or in the case of pensions which is an attempt to estimate payments towards a known liability, attempts have been made to provide realistic figures (see Appendix II). Transfer payments in the form of subsidies need not necessarily increase and may even be eliminated. It is for this reason that they have been excluded from the 1968 Budget, Part I. If it is decided, for practical political reasons that subsidies must be retained then Table 3, Part III, attempts to measure the cost of the subsidies given the maintenance of 1956-58 rates of subsidy. The balancing item, increased taxes required to meet subsidy payments, is self-explanatory.

The major subsidy is, of course, the subsidy on rice which arises from two sources; namely, a consumer subsidy representing the difference between the subsidised retail price and the average import price of all rice sold under the scheme and a producer subsidy which represents the difference, on that proportion of the harvest which is sold to the Government, between the guaranteed purchase price and the import price. The role of the producers' subsidy has been considered in Chapter 6. The main arguments for the consumer subsidy are on the one hand the advisability, particularly given a policy of wage restraint, of keeping down the cost of living and the practical argument that reductions in subsidies are unpopular measures. The general argument against the maintenance of consumer subsidies, in the context of the development plan is that they do subsidise consumption at a time when the whole bias of Government expenditure policy should be to restrain consumption expenditures and to increase expenditure willingly only on investment outlays. Whatever the balance of the pros and cons of this argument it is important that the scale of the financial costs of subsidies should be recognised. It is this which has dictated the form of presentation of the 1968 budget in this chapter.

The discussion in the preceding paragraph was largely in general terms but the specific reference was to food subsidies. Comment should also be made on the subsidies which arise from the losses which are at present being suffered on Government provision of postal and rail services, despite the profits which are normally earned by the electricity department and the profits which have normally, but not in 1958, been earned by the Port Commission. The postal subsidy raises difficult conceptual question as to what is the correct price to charge private consumers of postal services. The loss which appears in the Treasury accounts does not appear in those of the Department itself as it receives a very large credit for services rendered to other Government departments. To the extent that the process of development implies an increasing share by private consumers in the total demand for postal services there will be a tendency for the Treasury loss to be reduced without any change in rates. This process would occur, however, much more quickly with increased postal rates, provided that the increased prices were not compensated for by a fall in demand. At the moment all that can be firmly recommended is that there is scope for a detailed investigation of the economics of postal services in Ceylon. Railway losses, the largest single item in the business subsidy, are likely to be a more recalcitrant problem. Two points should however be made here. First, once again in the context of the Plan, it should be necessary for the Government to show that the current rate of subsidies on rail transport services are an essential contribution to the success of the plan if losses are to be permitted to remain at their present high level. Secondly, in so far as it may be decided that the subsidy on transport costs represented by these losses is too high a final decision should only be reached after a thorough examination of the whole question of the economics of transport in Ceylon. It may be, though it is unlikely, that the present gross loss on railways should be continued but that there should be a substantially smaller net subsidy on transport costs, the difference being met by increased rates of tax on other forms of transport, e.g., increased registration fees on business motor vehicles.

OTHER REVENUE

(a) FOREIGN BORROWING

As, by definition, there is no scope for reducing Government investment outlays, the next step is to consider policy in relation to capital account and other items which appear on the revenue side of the Budget. It will be noted first that the 1968 Budget, as presented here, assumes a substantial contribution from foreign aid and/or foreign lending (Item 13). It must be emphasised that this does not mean that it would be impossible to implement the Plan without foreign assistance. It only means that, in its absence, it will be necessary to reduce consumption much more severely and that foreign exchange reserves will have to be husbanded far more carefully. It should also be emphasised that the particular rate of foreign borrowing is a conservative one. At present, current expectations of receipts from foreign aid and foreign borrowing are of the order of Rs. 100 million per annum. Given the implementation of the Plan, which will make Ceylon a much more credit worthy borrower than she is today, the figure chosen (Rs. 150 million) is in fact extremely modest. Some 30 million U. S. Dollars or £12 million sterling represent very moderate claims on the capital markets of the world ten years hence.

In some quarters in Ceylon it is considered that an extensive programme of foreign borrowing is discreditable—a reflection on the newly won status of independence. This view can be shown to be one which is unrealistic and one which ignores the implications of development without assistance from the outside world. If to borrow is to be discredited there are very few, if any, nations in the world which are not or have not been discredited in the present or in the past. It cannot be denied that to expand an economy at the rate which is implied in the physical Plan without recourse to foreign aid is to expect an extremely high degree of self-restraint on behalf of the people generally. As this self-restraint, especially in a relatively poor country, cannot be expected to be exercised voluntarily for long periods, excessive strains may be expected to occur under any political system but especially under a democracy.

Apart from the political pressures that are inherent in very rapid development based solely on one's own resources, there are also obvious economic pressures that can be reduced, if assistance or loans are available from the outside world. Given foreign borrowing, consumers may be permitted to share in some of the benefits of increased incomes that otherwise would have to be transferred in some way or other to finance investment expenditure. While in any circumstances wage increases will have to be restrained, the existence of foreign borrowing gives much more freedom for manoeuvring, than would otherwise be the case. It would also ease tensions in the balance of payments. The essential point is that, in the past when under-developed countries—particularly the smaller ones —have made spurts of economic development, they have usually only been able to do so with the assistance of substantial calls on the resources of oversea countries. In the Nineteenth Century these spurts of development were usually the results of myriads of inter-acting decisions in the market places of both borrowers and lenders. Not infrequently foreign lending was given too freely and subsequent development slowed down because of unbalance in the domestic economy that had resulted from a temporary excess dependence on foreign lending. The only real difference in the present circumstances in Ceylon is that, here and now, there is no intention of making excessive use of foreign resources. Instead a planned programme is contemplated sufficient only to lessen the strength of the main disruptive pressures which are implicit in the planned rate of development. Under these circumstances planned borrowing can greatly benefit both the borrower and the lender (through expanding markets for its own products made possible by the extension of loans) just as was the case in different political and economic circumstances in the Nineteenth Century and as is the case today elsewhere in the world.

There is one other aspect of the foreign aid and borrowing programme that should receive considerable attention. This is that it must be recognised that Ceylon is a dependent economy according to the use of that term in the theory of international trade, namely, it is an economy the demand for whose exports both in terms of quantities and prices is very largely determined by conditions in the world market, i.e., by conditions very largely outside the control of domestic economic policy. In the past this has meant that Ceylon has suffered very marked fluctuations in its balance of payments, fluctuations which have, by and large, reflected externally induced changes in its terms of trade. This in turn has meant large consequential fluctuations in the volume of savings available for the finance of domestic investment. Given this marked liability to fluctuations in its external balance—largely due to factors outside its control—what Ceylon really needs, in the context of a sustained programme of economic growth is not so much a constant flow of foreign aid and borrowing, substantial though the benefits of such a flow may be. It needs, rather, some form of international economic aid in the form of an undertaking by external countries or institutions to underwrite the deficit fluctuations in its external balance that are otherwise likely to occur and which, if they do occur, may seriously jeopardise the possibility of maintaining the desired rate of growth. This should not be taken to mean, of course, that the whole of the liability to such fluctuations should be underwritten abroad. It is already part of domestic economic policy that foreign exchange reserves should be built up in years of good prices for exports and allowed to run down in bad years. In addition, by having to use part of boom earnings to repay borrowing incurred during a prior slump, the underwriting process envisaged here would have the effect of dampening the boom. In doing so it would ease the domestic monetary and fiscal problems which are inherent in severe fluctuations in the external balance.

(b) DOMESTIC LOAN PROGRAMME

A programme of foreign borrowing conceived along the above lines can, then, be of substantial benefit—both by relieving the strains of rapid growth and by helping to ensure the continuity of the process of expansion. A programme of internal borrowing by raising loans from the private sector (Item 14*a*) offers no such relief to the general problem of achieving a desired rate of domestic savings. It merely reduces the financial strains on the Government's revenue budget (indicated by Item 9) and consequently reduces its need to impose additional taxation in order to finance its hard core of current expenditures and its desired level of investment outlays. As conceived here it should be realised that the domestic loan raising programme is not thought of merely in terms of borrowing by the Central Government. It is meant to include independent loan raising activity by such Government instrumentalities as the Transport Board, the Port Authority, the Electricity Board and by industrial corporations such as the Ceylon Cement Corporation. From the point of view of the sources of funds it should also be made clear that it refers only to the private sector and excludes new subscriptions by Government institutions unless these are acting as agents or trustees for private savings. In so far as subscriptions are received from the banking system they are done so only to the extent that they reflect genuine savings through this medium. The supply of funds is not meant to include flows which merely represent inflationary expansion of bank credit. (See, however, Section (c,) below :)

It may appear at first sight that the target set in Table VIII (Rs. 150 million) is ambitious. There are reasons for believing, however, that this may in fact be an understatement of the potential supply of private savings to the loan market. Whether this is so or not depends partly on how rapidly it is possible to develop the institutions associated with the emergence of an active Government bond market (see the discussion of this question in the industry chapter). The degree of development of the Government securities market is however probably of relatively minor importance in terms of the particular target set in Table VIII. The probability is, given the development of the National Provident Fund and the growth of savings through such institutions as life insurance, that institutional saving, which is aided but not dependent on an active market, will more than meet the present estimate of supplies of funds. In addition it must be remembered that the recently introduced expenditure and wealth tax system puts a high premium on investment in Government securities by the wealthiest members of the community, i.e., those most likely to make substantial personal net savings. In fact the real difficulty is likely to be, not so much that insufficient funds will be forthcoming for the loan raising programme but rather that there will be too much lending by institutions and the wealthy classes to the Government sector which may impose strains on the supply of funds by the private sector to private borrowers. If this situation should develop a variety of measures might have to be adopted to ensure a correct balance between Government investment and the savings available for it, and private savings and investment. Such measures could take the form of requiring the trustees of the National Provident Fund to direct their lending policy towards acquiring the securities of private borrowers or of making available a much large volume of funds to Government financial intermediaries (Item 29*a*) for subsequent relending to the private sector.

(c) DEFICIT FINANCE

It is sometimes argued that in the context of a development plan such as that of Ceylon's there is considerable scope for the use of deficit finance, at least in the initial stages, in order to help generate the initial burst of growth. It is doubtful whether this is the case in contemporary Ceylon. There are already strong inflationary pressures barely being held in check. To give blessing to a further release of such pressures would be more likely to result in inflation as such and balance of payments of problems than in an increase in the rate of real economic growth, and it must be agreed that this is not a desirable objective. It is still the case, however, that there is a role for limited deficit finance, i.e., to the extent that it is not positively inflationary. What is in mind here is the fact that an increase in the volume of economic activity requires, other things being equal, an increase in the money supply. In so far as the increase in the money supply is held to satisfy the need to carry out monetary transactions it is not inflationary. Of this non-inflationary increase in the money supply the note issue forms an important part. Such increases in the note issue are, in effect, interest free loans to the Government. It is for this reason that it is justifiable in Table 3 I to estimate the increase in the note issue (Item 14*b*) that is likely to be necessary in the financing of the real volume of transactions. This particular estimate is based on past trends. In so far as large sectors of the economy at present make relatively little use of money payments and in so far as there is likely to be an extension of the monetary economy in this sense this estimate may be an understatement. The balance of the non-inflationary increase in the money supply is difficult to distinguish statistically as it forms part of the increase in bank deposits which also include some genuine savings. While the precise amount is difficult to measure it nonetheless exists and provides, to an extent which depends on the government-private composition of bank assets, a further source of non-inflationary finance to the Government.

(*d*) CAPITAL TRANSFERS

One relatively minor source of funds in 1968 but one which will, at that time, be of growing importance is Item 11, capital transfers from the private sector. These represent, in this particular estimate, the expected repayment of loans made by the Government sector in previous years to individuals or co-operatives in the manner described in the Plan programmes relating to Housing, Fisheries and Small-scale and Cottage Industries.

(*e*) DEPRECIATION

Finally reference should be made to the item depreciation charges (Item 12). This item represents an attempt to measure the expected cost of replacement of capital equipment financed by Government investment expenditure in previous years. The estimates have been made on the basis of applying depreciation rates to the opening capital stock and to subsequent (lagged) additions. The figure only has significance as a source of revenue if the prices charged for the use of Government capital equipment reflect the cost of making this provision. To the extent that prices are not charged on this basis and corresponding depreciation reserves not credited or applied to replacement then there will be a corresponding increase in the balancing Item (9) and consequently a corresponding need to raise additional tax revenue.

NEW FUNCTIONS AND PRESENTATION OF GOVERNMENT ACCOUNTS

This argument leads to two general points which are not directly related to the 1968 budget estimates but which are likely to influence the success of the Government in meeting its overall financing problem. The first is that successful economic planning is likely to require a revision of attitudes as to what is currently thought of as the central objectives of budgetary policy. In the past Government financing has tended to be thought of as a necessary evil. Henceforth the real aim of budgetary policy should be to see that finance is made available for the implementation of the Plan without undue recourse to inflationary techniques of raising funds. This may not seem a very striking change. On reflection it will be seen, however, to have considerable implications for traditional attitudes. For example, for the Plan budget to fulfill its role satisfactorily it will probably have to borrow substantially from the financial techniques of business, e.g., in accounting for depreciation and in the current pricing policy to be adopted for the sale of Government services.

The second point is really an extension of the previous one. It has long been recognised that the presentation of Government accounts leaves much to be desired. If it is the case that it is necessary to adopt a more business-like approach to the functions of the budget it follows almost automatically that there should also be more borrowing from the best business practice in the presentation of accounts or along lines which have been developed by the national income statisticians. At the moment the presentation of the Government accounts is such that it is difficult to unravel their meaning. A more rational presentation, the basis of which is already well established, would be a boon not only to economists, accountants and to bodies like the Public Accounts Committee, but also to the Treasury itself. Clarification of the presentation of accounts is an aid to clear thinking by layman and official alike. The initial cost in terms of broken traditions and the installation of new accounting procedures is a cost which can easily be borne if clearer thinking and clearer appreciation of the financial problems of development are amongst the results of that cost.

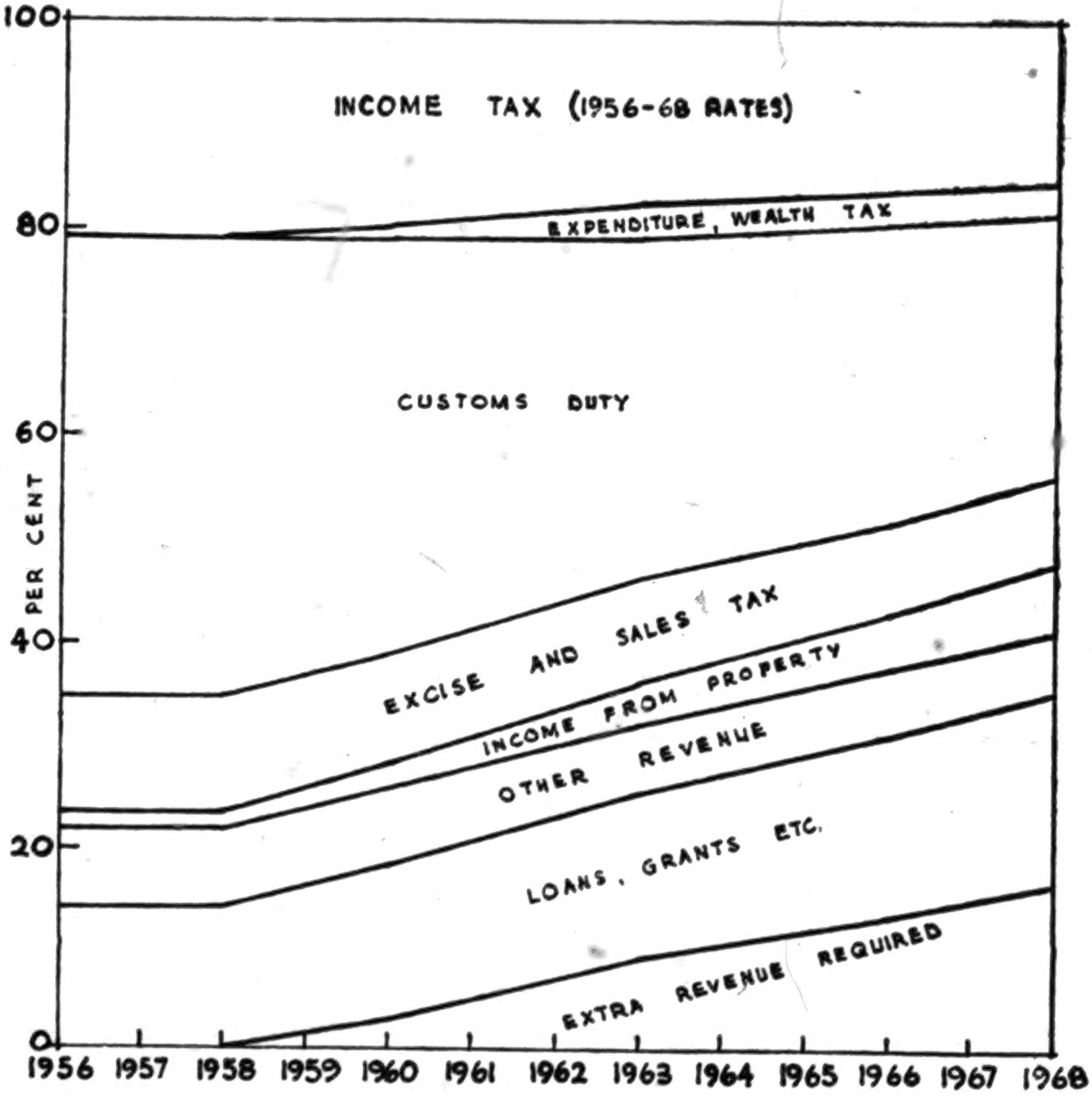
THE CHANGING TAX STRUCTURE

By examining the 1968 Budget it was possible to indicate that the financial problem was not unduly great for the largest individual budget of the period. In the course of the accompanying discussion it was possible

DIAGRAM VII

CHANGES IN TAX STRUCTURE

1956–1968



to illustrate the various alternatives whereby the additional finance could be raised. Similar budgets have been constructed along the same lines for each of the intervening years by means of which one can get a better overall picture of the financial problems of the Government during the period of the Plan as a whole. Thus the Government's total expenditure needs for 1959-68 may be calculated. Following the same general assumptions behind the 1968 Budget, the major sources of revenues may also be estimated. The result in terms of broad categories is given in Table IV.

TABLE IV

The Government Budget (1959–68 inclusive)

RECEIPTS	Rs. M. Amount	Per cent.	EXPENDITURE	Rs. M. Amount	Per cent.
Revenue at 1958 rates	15,949	72·5	Consumption	7,655	34·9
New Taxation required	2,368	10·8	Transfer payments	5,680	25·8
Receipts from loans, grants, &c.	3,650	16·7	Investments	8,632	39·3
Total	21,967	100·0		21,967	100·0

It should be noted, however, that two assumptions have been varied in making this ten-year Budget. On the one hand rough estimates have been made of the annual amounts to be yielded, from 1960 onwards, by the new (1958-59) system of expenditure, wealth, &c., taxes. On the other hand the expenditure includes the payment of food subsidies along the lines estimated in the note on rice subsidies (p. 130) and an estimate of expenditure on business subsidies. The main point illustrated by the Table is that over the ten-year period a vastly expanded investment programme, together with the increased current expenditures which would be required, do not call for excessive amounts of extra taxation—the proportion required being 10.8 per cent. of total revenue needs given the assumptions noted elsewhere about foreign borrowing, loan raising, &c.

Even this percentage gives a misleading picture of the impact of the plan on additional revenue requirements. As can be seen from Table V and the accompanying graph which compares the pre-plan and end-year budgets with annual averages for three phases of the intervening years, the plan does not imply a sudden imposition of a major tax burden but a gradual growth of the burden as the scale of investment grows. In interpreting the growing need for finance it must not be assumed that this implies a progressive increase in rates of taxation. It should be possible, given a careful selection of the types of taxes to be imposed in the early stages of the Plan, to obtain an increasing flow of revenue from a once and for all introduction of a new set of taxes. Thus if suitable commodities are chosen for excise, sales taxes, &c., there should be a continually increased flow of revenue from them. The criterion of suitability in this sense would be commodities the demand for which would be expected to increase in proportion to the general growth of the economy. It is from this point of view that there is much to be said for a much broader based income tax structure. This, given the increase in incomes envisaged in the Plan, would almost certainly be a " built-in " source of additional revenue even excluding increases in the average rate of tax. To the extent that the rates of tax are progressive and average incomes are expected to rise it is possible that such a tax structure would yield revenues more than proportionately to the growth of the economy.

The other major aspect of the financial problems of the Plan that is revealed by this Table is perhaps best seen in the graph based on it. It makes clear the fact that, to a considerable extent, the budgetary financial problem arises from one feature of the Plan, namely, its avowed bias towards import replacement and its goal of diversification of the economy. In the past the major part of Government revenue has been obtained from import and export duties. Given the nature of the plan the share of foreign trade in gross domestic expenditure falls sharply. Thus the ratio of merchandise imports plus exports to gross domestic expenditure falls from 64 per cent. in 1957 to 44 per cent. in 1968. It is this change in the structure of the economy which is reflected in the falling share of customs duties as a source of Government revenue illustrated in the graph. There may, of course, be qualifications to the particular pattern presented here. Thus there may be fortuitous (from the point of view of the assumptions of the Plan) favourable shifts in the terms of trade which alter the estimated receipts from export duties and permit greater revenues from import duties. The particular picture presented here may also minimise the likely demand for imports. This, however, will only be possible if simultaneously the share of foreign borrowing also increases as, otherwise (ignoring changes in the terms of trade), foreign exchange would not be available for their purchase. Despite these qualifications the main picture remains unaltered. Given the changed structure of the economy and the expanded investment programme there can be no escape from the need for revising traditional concepts of what are the appropriate forms of taxation in Ceylon.

TABLE V

Changes in the Government Budget (1956–58 to 1968)

	1956–58 *Average*	1959–61 *Average*	1962–64 *Average*	1965–67 *Average*	1968	1956–58 *Average*	1959–61 *Average*	1962–64 *Average*	1965–67 *Average*	1968
	(Rupees million)					*(Per cent.)*				
Revenue										
(*a*) Income Taxes at 1956–58 rates	279	318	363	412	450	20·2	19·5	17·3	16·0	14·9
(*b*) Expenditure, wealth, &c., taxes	Nil	20	70	84	95	Nil	1·2	3·3	3·2	3·1
(*c*) Customs Duties	619	657	699	744	775	44·9	40·3	33·2	28·8	25·7
(*d*) Excise and Sales Tax (5+8)	157	178	203	230	250	11·4	10·7	9·7	8·9	8·3
(*e*) Income from property	20	37	79	136	190	1·4	2·3	3·8	5·3	6·3
(*f*) Other (1+3+7)	109	125	145	168	185	8·0	7·7	6·9	6·5	6·2
(*g*) Balance (including subsidies)	Nil	61	203	354	515	Nil	3·7	9·7	13·6	17·1
(*h*) Total Current Revenue	1,184	1,396	1,763	2,127	2,460	85·9	85·4	83·9	82·3	81·6
(*i*) Loans, grants, &c. (11 to 14)	194	238	338	456	553	14·1	14·6	16·1	17·7	18·4
(*j*) Total Receipts	1,378	1,634	2,101	2,583	3,013	100·0	100·0	100·0	100·0	100·0
Expenditure										
(*k*) Consumption	589	660	743	842	920	42·7	40·4	35·4	32·7	30·6
(*l*) Transfers—Current Account	374	418	530	679	802	27·2	25·6	25·2	26·2	26·7
(*m*) Capital Account	415	557	828	1,062	1,291	30·1	34·0	39·4	41·1	42·7
Total Payments	1,378	1,634	2,101	2,583	3,013	100·0	100·0	100·0	100·0	100·0

Notes.—1. Some of the items in the 1968 budget have been amalgamated so that presentation may be simplified. The numbers in brackets give the item numbers in the 1968 budget.

2. Some totals may not add exactly because of rounding errors.

Note on the Implication of Rice Subsidies

The cost of rice subsidies plays an important part in determining the size of the need for extra taxation under the Plan. There also seems to have been inadequate discussion of the economics of these subsidies. As this is so, it has been thought advisable in this report to present in some detail the method of deriving the estimates and to draw attention to some of their implications.

The estimates are presented in Table IV. The detailed method of calculation is given in Appendix III. Here it is necessary merely to look at the implications which these calculations have for present, but more so for future, financial policy. These may be put very simply. If the consumer rice subsidy is continued at present rates and if the Guaranteed Purchase Scheme continues with a moderate increase in its usage by producers the cost of the rice subsidy is expected to rise from about Rs. 150 million in 1959 to about Rs. 260 million in 1968 (item 14 of Table VI). If, however, all domestic output were to be purchased under the G. P. S. (instead of only about one-third of it at the moment) the cost of the scheme would rise from about Rs. 370 million in 1959 to about Rs. 700 million in 1968 (item 19 of Table VI) ! Over the Plan period the comparative amounts are on the conservative assumption of G. P. S. usage Rs. 1,950 million and on the limiting assumption Rs. 5,150 million.

The moral of this calculation should need no emphasis. It is possible to retain just the consumer subsidy on total supplies (not 70 per cent. as in 1957 but all of them) without causing any extra financial hardship. This would ease the present financial problem of *total* rice subsidies quite substantially. The maintenance of this subsidy throughout the period would likewise not be arduous and would of course preserve its useful function, in the context of the Plan, of restraining increases in the cost of living. Nevertheless, this should not be taken to mean that reductions in the consumer subsidy need not be contemplated.

In the case of the producer subsidy (the G. P. Scheme) however, there exists a situation which has potentially explosive implications for the financial future of the Plan. At the moment the situation is not acute because the producer subsidy is only paid on about one-third of domestic output. By the very nature of the Plan it is probably that this proportion will increase. On the one hand increased urbanisation is expected. So too is an increase in rice yields. This latter trend would mean an increase in producers' surpluses and hence proportionately greater use of the G. P. S. A small shift along these lines is assumed in estimating the lower limit of the expected payment for rice subsidies. If the shift should be, as is possible, substantially greater the cost would to that extent be increased. In the limiting case where total domestic output is sold under the G. P. S. the financial cost—

TABLE VI

	Estimation of Rice Subsidy (1957–68)										
	1957	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
1. Rice consumption (m. bushels)	69·1	74	77	80	83	86	89	92	96	99	102·9
2. Domestic Production (m. bushels)	31·5	37	40	43	47	51	55	60	65	71	76·9
3. Imports (m. bushels) (1–2)	37·6	37	37	37	36	35	34	32	31	28	26·0
Producer Subsidy—cost to Commissioner											
4. Proportion Supplies receiving subsidy	15%	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%
5. No. of Bushels to be subsidised (given 4) (m. bushels)	10·3	11·8	13·1	14·4	15·4	17·2	18·7	20·2	22·1	23·7	25·7
6. Rate of subsidy per bushel (Rs. 14·60 − Rs. 7·34 = Rs. 7·26)											
7. Producer subsidy (5 × 6) (Rs. m.)	74·8	85·7	95	104	112	125	136	146	160	172	186
Consumer subsidy											
8. Subsidised Output (3 + 5) (m. bushels)	49·1*	48·8	50·1	51·4	51·4	52·2	52·7	52·2	53·1	51·7	51·7
9. Rate of subsidy per bushel (Rs. 7·34 − Rs. 6·12 = Rs. 1·22)											
10. Consumer Subsidy (8 × 9) (Rs. m.)	59·9	59·4	61	63	63	64	64	64	65	63	63
11. *Total Subsidy so derived* (7 + 10) (Rs. m.)	134·7	145	156	167	175	189	200	210	225	235	249
12. Increase in Value of Stocks (Rs. m.)	16·4										
13. Cost of handling Subsidy (15 − 11 − 12) (Rs. m.)	7·2	7	7	8	8	9	9	9	9	8	8
14. *Total Subsidy* (11 + 13) (Rs. m.)	141·9	152	163	175	183	198	209	219	234	243	257
15. Total Outlays 1957 (11 + 12 + 13(Rs. m.)	158·3										
Subsidy if Total Domestic Output Subsidised											
16. Producer Subsidy (2 × 6) (Rs. m.)	228	268	290	312	340	370	398	435	470	515	555
17. Consumer Subsidy (1 × 9) (Rs. m.)	84	88	94	98	101	105	109	112	117	121	126
18. Handling cost of subsidy (Ratio $\frac{1}{11}$ × 13) (Rs. m.)	10	11	11	12	12	12	13	13	14	14	15
19. *Total Subsidy* (16 + 17 + 18) (Rs. m.)	322	367	395	422	453	487	520	560	601	650	696

* This differs from 3 + 5 in 1957 because of adjustments for changes in stocks.

which represents a transfer through taxation of income from non-rice growers to rice growers—would be such that the whole financial structure of the Plan would be jeopardised.

Private Finance

THE NATURE AND SCALE OF THE PROBLEM

The preceding section has examined the nature of the financial problem as seen from the point of view of the Government sector. It is now necessary to examine the question of finance for the private sector. The first point to note is that the bias of the investment plan is towards the government sector. This bias arises partly from the physical nature of the investment programme, e.g., the need for large-scale land development and irrigation works and for relatively large-scale investment in the electricity supply industry. This type of investment partly by its very nature and partly because of the established institutional patterns in Ceylon naturally fall within the government sector. In addition the government has within recen years entered fields which formerly were not part of the accepted government sector, e.g., port cargo handling and passenger road transport an for some time has been expanding its share in fields involving both publi and private enterprise—notably in the field of secondary industry. As result of this entry into new fields, it is more of less inevitable, particularl given the role of investment in land development and electricity suppl that the share of government in total investment rises considerably durin the period of the Plan.

This may seem an odd form of entry into a discussion of private financ In fact it is not; for the corollary of this change in the composition public-private investment is that the need for private savings for inves ment in the private sector is correspondingly reduced. That this is so, clearly indicated in the ratios of private investment and private savin presented in Table 1 of this chapter. Thus gross private investment on increases from 6.9 per cent. to 7.6 per cent. of national income. It must recognised however that these calculations are somewhat misleading. the one hand they reflect a definition of government investment based initial expenditure concepts. Thus they do not reflect the total investme in the private sector defined in terms of ownership. In other words, in su sectors as that of export crops, the physical investments in the priv sector as usually understood are much greater than the private inve ment outlays, the difference representing the governments contribution development in these vital fields of the economy. On the other hand should be realised that the net private savings estimates of Table 1, wh rises from 5.5 to 6.4 per cent. of national income, include a subsequent net transfer of private savings to the government financial programme. It should also be noted that the apparent differences between these two sets of ratios may be accounted for by the distribution of the depreciation item into its public and private components. The details of this reconciliation for the 1968 figures may be found in the tables presented in Appendix II.

The essential point to note here is that by the nature of the detailed investment outlays and because of the relative distribution of private and public investment the plan does not call for a major increase in the ratio of net private savings to national income. At the same time it would be ridiculous to deny that there is a financial problem for the private sector. While from some points of view the government will either be relieving the private sector of financial strains by taking on tasks which might otherwise have fallen to it, or making a substantial contribution towards investment occurring in that sector ; from other points of view it is proposing to make very strong demands on the potential surpluses of the private sector. This means, that much stronger efforts will be necessary to achieve the desired rate of net personal savings than might appear to be the case simply by a comparison of the pre-plan and end-plan year net savings ratios. In real terms, while private consumption expenditures are not expected to fall-on the contrary per capita consumption is expected to rise—considerable effort will have to be exerted so that the pressures for much heavier rates of consumption are not permitted to prevent the achievement of the desired rates of net private savings.

PROSPECTS FOR INCREASED SAVINGS

Thus while the financial problem for the private sector need not be acute there are also good reasons for believing that it will not be negligible. What then are the prospects for increased private savings and what measures need to be taken to ensure that they do emerge in sufficient volume to meet the needs of the Plan ? Perhaps the first response to the first half of this question might be the argument that real incomes per capita are expected to rise during the implementation of the plan. Hence, other things being equal, it would be not unreasonable to expect an increase in the proportion of national income that will be saved. Against this, however, it must also be recognised that a shift in the distribution of national income in favour of the poorer classes is also part of the nature of the Plan. This could mean that the negligible savings of this group would outweigh the increase in savings of the traditional savers so that it could well be the case that there is no a priori reason to expect a rise in the proportion of net private savings to national income unless other factors are made, or induced, to influence the process of savings.

And other factors are present. In many well developed countries in recent years there has been a shift from private savings through individuals to private savings through institutions. To the extent that these savings tend, to a considerable degree, to take the form of contractual savings, i.e., through life assurance or through pension funds, there is a tendency towards a higher rate of personal savings than would otherwise be the case, i.e., once an initial decision to save is made there is a greater probability of short-term fluctuations in incomes affecting consumption instead of savings. This point is relevant here because, there has recently appeared in Ceylon what may be expected to become a major source of private savings namely the National Provident Fund which began active operations towards the end of 1958. Initially these operations have taken the form of bringing together in the same scheme a variety of existing private provident fund schemes and existing schemes for such bodies as government industrial corporations. The Fund is at present, however, engaged in the process of extending the scheme to the estate sector and subsequently intends to bring within its framework the majority of private wage employees. For administrative reasons this process will take time. By the end of the 10-year plan, however, the Fund will be a long established institution and may be expected to have achieved its aims of extending its scope to as wide a range of employees as is practicable.

The savings potential of this scheme is very great indeed though it is almost impossible to make accurate estimates of the flow of savings which would pass through its hands. Hence the following arithmetic should be taken as purely illustrative. By 1968, given the implementation of the Plan, annual wage income would be of the order of Rs. 5,000 million. Assuming that, by that time the scheme covered 80 per cent. of wage earners, this would mean that the gross receipts of the fund would be of the order of Rs. 400 million per annum $\frac{80}{100} \times 5{,}000 \times \frac{1}{10}$). By this time a substantial flow of expenditures on pensions, &c., could be expected but, given the relatively recent origin of the scheme, the rate of growth of the numbers entering it and their age composition, a minimum estimate of the net savings accruing to the fund could well be over Rs. 200 million per annum on this assumption of total receipts. While no great faith should be put on this particular amount, there can be no doubt of the potentialities of this scheme for mobilising savings, even when it is admitted that its existence is likely to reduce the flow of savings that might have been expected to develop in other forms in its absence.

It should also be recognised that the probability will be that the bias in investment policy of the managers of the National Provident Fund will be towards investment in government securities of one form or another, even granting that the present undesirable duplication of functions of the Monetary Board as trustees of the Fund and managers of the public debt is brought to an end with the growing maturity of the scheme. This concentration of investment in public securities is not necessarily a bad thing (though it may involve transfer difficulties which will be discussed in more detail below) either from the point of view of the best investment policy as that would appear to the members of the Fund or from that of an apparent drain on the funds available to the private sector, if only for the reason, as was pointed out earlier, that the financial balance of the Plan is such that a significant transfer of this type is expected to form part of overall government budgetary policy. To the extent that this budgetary need is met via the Provident Fund, demands on other sources of private savings for this purpose are correspondingly reduced.

It may nevertheless be advisable that some at least of the other institutional savers have a bias towards investment in private securities. This, it may be expected, would be the case in the proposed Development Savings Bank scheme.[1] This scheme, in all its details is rather complex. Viewed as a savings mechanism, however, its essential principles are simple, namely simultaneously to foster private savings, to pool them so that the contributions of many small savers are available for investment and by doing so to stimulate both the rate of savings and the rate of private investment. It is conceived of as combining, amongst other things, something of the nature of an unit investment trust movement with something of the nature of a private provident fund, though it differs substantially in detail from both of these institutions. In view of the need to foster private savings and the probable need to have a significant institutional channel for redirecting private savings into private investment there is much to be said for the early adoption of this scheme. It must be recognised, however, that, initially at least, there should not be too great an expectation of the net contribution to savings this institution can be expected to make.

GOVERNMENT POLICY FOR PRIVATE SAVINGS

While a substantial contribution to the increase in the rate of net private savings can be made by the development of institutional savings it should also be clear that they cannot be expected, by themselves, to provide a complete solution to the problem. There must also be policies directed towards giving incentives to private individual savings and to direct business savings. There has, for some time, been a substantial system of incentives for the latter type of savings through a variety of reliefs from income tax most of the details of which have been described in the Report of the Committee on Incentives to Private Investment which is to be published elsewhere. The details of these incentives have been altered under the recent amendments to the Income Tax Ordinance which replaces them with similar types of incentives. Some of these are specific to industry others are of general significance for business enterprise. In other fields, notably in export agriculture, there is a variety of measures whereby the government, by contributing a substantial share of the cost of new investment, directly stimulates the private sector to increase its savings in order to provide the required balance. Details of these schemes are to be found in the appropriate chapter. A similar type of assistance is also given by the government towards development of other agricultural crops, notably paddy, where it takes the form of a subsidy on fertiliser, rather than a contribution to investment expenditures narrowly defined.

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[1] *Development Savings Bank* by C. Loganathan. Published by the Ceylon National Council—I.C.C. 1959.

In the sphere of personal savings as such, there has for some time been some direct incentives towards savings through such measures as relief from income tax on life insurance premia payments, &c. These, however, have been of relatively little importance. Recently much more powerful incentives to private personal savings have been introduced, namely through the new system of expenditure taxes. One of the major aims of this technique of taxation is just this—to increase the rate of private savings by penalising, at increasingly onerous rates, undue expenditure on consumption. Naturally, and intentionally, the incidence of these taxes falls most heavily on the very wealthy, but these, it must be remembered are the people who traditionally form the source from which a substantial, if not the greater, part of personal savings may be expected to come. This legislation has only recently been adopted and it is too soon to point to specific directions in which savings may be expected to be fostered or what is the likely additional savings that will result from them. It is sufficient here to note that there has recently been added a substantial spur to the growth of private personal savings.

PROVISION OF CAPITAL MARKET INSTITUTIONS

It is not sufficient, however, simply to introduce such methods of increasing savings as have been described in the last few paragraphs, it is also necessary to take steps to improve the institutional framework of the capital market. As will be argued in a different context (in the Industry Chapter) the major steps required to increase the efficiency of the long-term capital market for the larger types of borrower are an efficient govenment security or bond market and a mature stock exchange. Neither of these institutions can be expected to be created by fiat. They must emerge through a process of growth. There is nevertheless a considerable variety of measures whereby this growth can be fostered. Thus on the one hand, the proposed government loan raising policy can be framed in such a way that it simultaneously is a medium for giving publicity to the whole process of development and is directed towards encouraging private as well as institutional investors to investment in the type of government securities which must form the basis of a bond market. On the other hand financial aid could be given towards assisting the formation of a stock exchange at an earlier date than might otherwise be the case in order to allow a greater degree of specialisation in sharebroking than is at present possible and hence, it is presumed, a hastening of the rate of growth of a greater degree of expertise in this field. To help provide a needed variety in the types of security available on these markets, public corporations such as the Transport Board, the proposed Electricity Board, and even municipal authorities could be encouraged to make direct appeals to the public rather than rely on advance accounts, internal loans, &c., from the government itself. This could also be the case for the growing number of government industrial corporations. In this way too a more varied structure of interest rates might be expected to develop. To ensure that funds were available in the early stages at least, the government could contemplate the establishment of a government investment trust and/or suggest to the trustees of the Provident Fund that they take advantage of their permitted powers to hold securities other than those of the central government itself. Given such fostering measures, and others like them, the pressures resulting from the new tax system and the demand for funds from the private sector that is expected to emerge with the gathering pace of development, it is not difficult to see the fairly rapid emergence of a reasonably flexible public market for government and private securities.

PROMOTION OF PRIVATE SAVINGS

Fostering private savings can take a variety of other forms. Thus as will be pointed out in relation to the needs of small-scale industry, savings can be increased by reducing initial capital requirements through the establishment of industrial estates and through the provision of hire purchase facilities particularly for purchasing capital equipment. These processes by initially increasing the rate of growth of investment outlays, can generate a faster rate of growth of savings by small business men, than would otherwise be the case. In addition investment and savings can be fostered by providing facilities whereby types of security (other than those at present accepted) may be pledged in order to receive loans. This can be done for industry (see Chapter 8) by introducing a system of insurance against bad debts in order to permit the wider use of stocks in trade as a form of security for small business men. In the field of agriculture, a system of liens on growing crops could be feasible. This might not be possible in all types of agriculture but clearly there are a number of agricultural industries in Ceylon including the major export crops—tea, rubber, coconuts—where the risk of crop failure is not particularly great. This could easily be a type of activity which it would be appropriate for the proposed new Co-operative Development Bank to undertake and which could be of particular advantage to the smaller producers of these crops. Finally while bank deposits as such are not necessarily net savings there does tend to be a hard core of net savings in the total of bank deposits. Hence measures which would extend the habit of banking services, such as the extension of the system of branch banking and the setting up of the Co-operative Development Bank, could add to the supply of net savings.

THE RATE OF INTEREST

Further thought needs to be given to the role which increased rates of interest can play in promoting increased personal savings. There is no doubt that the present rate of interest on government securities is low. It is believed in some quarters, however, that it is high enough to attract all the savings which are potentially likely to be invested in this particular field. This may be true of the present and of the recent past. It may not be true in the context of the developments in the capital market that have just been described. At the moment the trustee type of investor, the one who has a high preference for security and predictable monetary returns, has no alternative to government securities other than the still lower yields on long-term bank deposits. If various government and semi-government institutions should start raising loans on their own account and if demand from private borrowers increases, then the government might find it difficult to raise the amounts which are implied in the loan-raising estimates of the Plan, unless it is prepared to raise interest rates.

In a situation where rates of interest are high in real terms an excessively low government bond rate will tend to be reflected in falling subscriptions to new issues. If the loan programme should fail the alternatives from the Treasury point of view are : on the one hand a small increase in taxation to finance the difference in yields from say 3 per cent. to 5 per cent. ; on the other the necessity to raise large amounts of taxation in the place of loans which cannot be raised. While it may be true that small changes in the rate of interest have little direct effect on the rate of saving it is at least equally true that a higher rate of interest should help foster a higher rate of savings than would otherwise be the case. In a situation where the emphasis is on increasing the rate of savings is it wise not to make use of this particular incentive ? The long-term budgetary benefits from loans may easily outweigh the short-term costs, which in any event are transfer payments.

It is nevertheless difficult, at the moment, to make positive recommendations about the appropriate level of the rate of interest because steps have already been taken which have substantial effects on the after-tax yields on government securities namely the recently introduced wealth taxes under which government securities are exempt from this particular tax. The effect of this is to raise substantially the after-tax yield of government securities for all those liable to wealth tax. The details of the effects of this tax on the interest rate structure have not yet been examined thoroughly. Preliminary investigations, however, would suggest that most people liable to wealth tax would now have to earn 6 per cent. on other securities in order to get an after-tax yield comparable to that given by government securities. The greater the wealth of the person the greater is the relative after-tax yield of government securities. Thus, on certain assumptions about the relationship between income and wealth for example, it would appear that a person earning an income of Rs. 100,000 would have to earn 9 per cent. on other securities to get a comparable after-tax yield to that obtainable from government securities.

Any kind of tax exemption scheme related to yields on government securities naturally has a bias in the direction of the wealthy because of the progressive incidence of income, wealth taxes &c. It may be that further investigations into the relative incidence of wealth taxes will indicate that exemption of government securities is not the most appropriate method of raising after-tax yields on government securities. It may be that the practice in some other countries, of a straight rebate on all income derived from government securities, while still progressive, would tend to promote much broader based demand for government securities, it being still assumed that some technique of raising relative after-tax yields is considered to be preferable to raising the nominal rate of interest itself.

Whatever the technique used, it must be remembered that there is a case for raising interest rates to promote savings. This may hardly be relevant on the fringes of the Ceylon capital market where interest rates, partly because of high risk premia, are already extremely high. It may well be relevant in the sense that the rate of interest on government securities may be quite out of step with rates of interest elsewhere in the economy. To the extent that this rate is at present protected by institutional rigidities no great damage may be done to the loan programme. As the more developed capital market, which is expected to emerge during the period of the Plan, begins to take shape it may, however, be found that this protection is not enough to ensure the success of the loan programme without some upward adjustment of interest rates. In so far as the pressure on government securities in the narrow sense of central government securities is a result of the emergence of new types of government borrowers—Electricity Board, government industrial corporations &c.—and in so far as provident fund lending develops alone lines indicated earlier the total loan programme need not be seriously affected. The prospects for an active market in government securities as the basis for a more developed capital market may however not be very good unless higher rates of interest are available to the average, as well as the relatively wealthy, investor.

GOVERNMENT AND PRIVATE SAVINGS BALANCE

While, then, it is possible that personal savings may not be directly invested in government securities in sufficient quantities to develop an active bond market it may still be the case that unbalance will develop in the structure of savings because of too great a flow of private savings to the government sector. This, as was mentioned, might be the case if the National Provident Fund does succeed in rapidly extending its scope to cover the majority of wage earners. It is worth pointing out however that this does not necessarily raise difficulties. On the one hand such a degree of success could mean lower rates of direct taxation and hence more savings in the hands of people who are most likely to re-invest in the private sector. On the other hand, as was mentioned in a different context, there may well be considerable scope for expanding a reverse transfer of capital funds from the government to the private sector through an increased rate of government lending to financial intermediaries of all sorts, which loans would in turn be re-lent to the private sector. Whether or not this problem does develop there seems to be no reason that it cannot be solved relatively easily if it should do so.

Partly because of the lack of reliable estimates of personal savings in their different forms in recent years it has not been possible to quantify the issues relating to the flows of private savings in the way in which it has been possible to do so for the government sector. To some this may mean that the preceding discussion of the problems of private finance lacks an air of conviction. This, however, would only be giving an undue weight to the actual figures appearing in the discussion of the government sector. These latter figures are after all only reasonable estimates. They are meant to illustrate rather to measure accurately. Lack of figures should not mean lack of conviction. While no attempt has been made to conceal the fact that any increase in the ratio of personal net savings, cannot be achieved without conscious effort, it should also be apparent that there is no reason, in principle, why the flow of private savings should not be adequate for the needs of private investment during the course of development of the 10-Year Plan.

Summing-up

Both from the point of view of government finance and from the point of view of private finance it has been shown that, within the context of an achieved physical plan, there is no necessary reason for believing that the supply of finance will prove to be an insoluble problem. It must be admitted that the present discussion of financial issues is by no means complete, particularly in relation to the private sector. But this point cuts in both ways—methods of promoting savings have been no more exhaustively treated than have the possibility of there being difficulties not foreseen in detail at this stage. Given due allowance for the incompleteness of the discussion, it still remains the case that, while there undoubtedly will be difficulties in securing the right amount of finance, at the right time, and in the right place, the weight of evidence must surely be that these difficulties can be overcome. This is not meant to imply that there will not be sacrifies involved in achieving the Plan and that to some extent these sacrifies will take a financial form. There will be sacrifices. But the benefits will far out-weigh them and the sacrifies are not so great that the benefits cannot be achieved. Given the right amount of understanding both by those concerned with policy and the people as a whole, and given the right degree of determination, once again by both groups, there is no financial reason why the plan should not be implemented.

Finally, it is important to relate the financing process to the question of the cost of living. In recent years pressures towards higher costs of living have come to a large extent from redistributive sources—i.e. labour, making use of a stronger bargaining position, has tended to demand wage increases in advance of increases in productivity. The increase in wage incomes has tended to produce upward pressure on prices generally and so on the cost of living. During the period of the Plan pressure on the cost of living may be expected to come from one other major source in addition to that arising from changes in the relative share of wages. Thus an attempt to expand investment faster than the flow of voluntary savings will tend to lead to inflationary pressures, one aspect of which may be increased monetary costs of living.

As has been mentioned there are some who would argue that in order to obtain rapid development it is useful to permit a certain degree of inflationary finance especially in the initial period. Although under certain circumstances some weight can be given to this view, in general it does not appear to be directly relevant in the present conditions of the Ceylon economy. This is so for a number of reasons : that in any event inflationary pressures are likely to be present in the process of increasing the rate of development ; that these pressures are going to be difficult to control ; that positive encouragement would tend to mean that they would get out of control ; and that this could have serious damaging effects on the whole structure of planned development.

The relevance of this argument to the question of the cost of living is twofold. On the one hand the whole direction of financial policy is such that it is directed toward restraining monetary increases in the cost of living. On the other hand it must be recognised that some particular price rises may be envisaged e.g. transport charges may be expected to rise. In the context of the plan as a whole such particular rises should not be allowed to form the basis of claims for a general rise in wages which would have immediate affects on the whole level of living costs. In real terms the Plan is directed at increasing real living standards. By a determined attack on the problems of Colombo Port alone it is, for example, expected that there will be substantial economy wide reductions in real costs. More generally by emphasising investment and increases in productivity the Plan expects continuing gains in terms of real output per head. Finally by taking steps to solve the twin problems of unemployment and under-employment not only are real incomes to be increased but a substantial part of the present redistributive pressures on the cost of living may be expected to be reduced. It is in this fashion that an increased rate of investment combined with a carfully exercised financial policy may be expected to result in restraint on increases in the cost of living and simultaneously increases in real living standards.

Note on Local Government Finance[1]

Throughout the Plan the term "government" is meant to include all types of governmental activity, i.e., the central government itself, local government authorities, statutary corporations and government industrial enterprises. There are, however, few specific references to local governmental activities. This is largely because local government institutions have not, in the past, played an active part in domestic capital formation. This situation should not be allowed to continue. The Plan calls for self-help not only in the sense of the phrase, frequently used in this report, of non-monetised investment but also, and this is a more important usage, in the sense that the people must be more prepared and stimulated to do things for themselves. One major way in which such activity may be expected to be mobilised for development purposes is through the system of local government at all its levels.

That local government should not have been sufficiently active in the past depends on more than financial considerations. Lack of finance has, however, been an important ingredient in bringing about the existing malaise. It is thus useful to suggest here some ways in which this situation could be remedied, though it must be remembered that there must also be constitutional and other changes before the full benefits of an adequate supply of finance could be realised completely.

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[1] for a fuller discussion of this subject see Ursula K. Hicks, Local Government and Finance in Ceylon in *Papers by Visiting Economists*, Planning Secretariat, Colombo, 1959.

Finance for developmental expenditure by local authorities can come from three major sources : (*a*) taxes ; (*b*) grants from the central government ; and (*c*) the issue of loans. It is convenient to consider each of these in turn.

One reason for inadequate local authority spending is that the main single source of tax revenue, taxes on property has not expanded sufficiently quickly. This has been partly because of an inadequate method of calculating the level of the property tax namely on the annual value basis. In a country in which the bulk of households are on an owner-occupier basis this means on the one hand, that it is relatively easy to place a fictitiously low value on any particular property and on the other, that there tends to be a very long lag between tax yields on property (so estimated) and general prices during a period of rising prices such as has occurred during the post-war period. If values were instead to be estimated on a selling price base, it might be expected that, for any given desired rate of taxation, the present and future yields of local government property taxes would be substantially higher. In this way alone considerable revenue could become available to local authorities enabling them to undertake a much more active developmental policy than has been the case.

As far as the second major source of local government finance—central government grants—is concerned the difficulty has been, not so much that the proportion of local government expenditure financed by the central government has been too low but rather that the level of local government spending itself has been too low. It is still the case, however, that central government grants do not seem to have been made on a consistent, coherent basis. Thus if a more systematic policy were developed it should be possible to use the government's grants to much better purpose, on the whole, than they have been. It must be accepted, too, that should local governments take active steps, to increase their own revenues, the central government's contributions must be expected to rise more or less proportionately.

While it is legitimate for local authorities to finance a certain amount of capital works out of revenue it must be expected that large works will require loan finance. Here the difficulty has not so much been the constitutional obstacles to raising loans but the unwillingness of the central government to allow them to be raised. This has been to no small extent due to the fact that responsibility for balancing their budgets has not rested squarely on the local authorities. If this responsibility is increased, and if steps are taken to ensure a greater flow of current revenues, then this deterrent would no longer obtain. In these circumstances the advantages that could come from mobilising local patriotism for subscriptions to local loans should not be overlooked.

There are then important ways in which increased flows of finance could be obtained for local authorities from each of the major sources of funds potentially available. It is therefore possible to remove this restraint on the development of local authorities in Ceylon. Apart from the personal and social benefits that could stem from greater activity in the sphere of local government, the contribution which such activity can make to the plan generally and finance in particular should be recognised.

Thus one important reason for the slow rate of development in the past is that the central government departments have been consistent underspenders. Through a variety of ways this has slowed down the pace of development. If an active local government system can be established and if spending at present done by central government departments can be passed on to such local bodies, many of the administrative delays which give rise to underspending can be avoided and the process of growth quickened.

An alternative way of looking at the contribution that can be made by local government to development is to point out that it holds out prospects of increasing the rate of growth of savings in the economy. People may be much more prepared to restrict consumption expenditure when the benefits of that restriction are put in concrete terms such as the local primary school, the local road, &c., than when they take the form of demands for taxation, &c., which emanate from the central government, the results of which are not immediately obvious. A faster rate of growth of savings is, of course, only another reflection of a faster rate of growth of development.

APPENDIX I

METHODS OF DERIVING GOVERNMENT BUDGET—1968

General Comment

AS was mentioned in the text the general assumptions behind the estimates are two. The first is that the average 1956-58 total government budget revenues, in the form in which they are presented in the Treasury Statements, remain fairly constant at about Rs. 1,270 million. This is taken to mean that the average of these budgets is a fair indication of prevailing revenue raising rates. The second is that, for the present purpose, it may be assumed that the targets of the Plan generally will be realised. On these assumptions it is considered legitimate to apply indexes, &c., derived from The Plan to the prevailing revenue pattern in order to estimate probable future revenue yields. How this procedure works in detail is explained below. It should also be mentioned, as will become clear in the detailed comments, that the revenue and expenditure pattern for 1956-58 is based on the figures which are presented in the Central Bank of Ceylon's *Annual Report* 1958 (Table 20, pp. 100-103) adjusted to some extent by more recent data available in the Treasury's *Accounts of the Government of Ceylon*, 1957-58.

Specific Items

1. *Sales of Services and Receipts of Business Enterprises.*—This item is equivalent to the sum of the Central Bank items 1 and 8 less receipts from the Postal Department, Port Commission, Railways Department and the Electricity Department. These departments were removed partly to maintain comparability with other sections of the Plan and partly to draw attention to the subsidy item which results from the net excess of current expenditure over current revenue for this group of departments. The revenue and expenditure items of the excluded departments were taken from the *Accounts of the Government of Ceylon, Part I*, for the years 1955-56 to 1957-58 from which the Central Bank's tables are also derived. See also notes on items 18 and 20. The index used in calculating the 1968 receipts was that showing the increase in total sales to the home market, i.e., an index reflecting changes in turnover.

2. *Present Taxes on Incomes and Profits.*—This is Central Bank item 2. The index used was the same as in item one. This was used rather than the higher index showing changes in national income because the item 6 (*d*) below—Business Surpluses—includes a substantial income tax component. Whether or not this latter item appears as income tax or not is merely a matter of internal government book-keeping. The real point for present purposes, is that private income tax cannot be expected to increase in proportion to national income because a substantial part of new investment, which might otherwise have generated private income tax, is expected to accrue in the Government sector. Consequently it has seemed preferable to retain income tax from Government business enterprise in item 6. It should also be remembered that the calculation in Table 3 is based on the application of 1957 rates of taxation : To this should now be added some amount represented the increased yield of the 1958 tax system. In the *Budget Speech* this was estimated to be Rs. 66 million in a few years time. By 1968 it could well be of the order of Rs. 100 million. No more accurate measure is however possible on the data at present available.

3. *Death Duties.*—This is Central Bank item 4. It is a negligible amount and has been arbitrarily doubled for 1968.

4. *Customs Duties.*—This is Central Bank item 5. The average yields from import and export duties between 1952-53 and 1957-58 on net imports c. i. f. and net export f. o. b. were calculated and found to be 18·0 per cent and 19·5 per cent respectively. As both rates were stable, especially since

12—J. N. R 2359 (6/59.)

1953-54, they were applied to the values of net imports and net exports derived from the balance of payments Plan estimates for 1968. To the extent that there are two conflicting tendencies implicit in the plan namely on the one hand a shift in the industry structure of imports which would tend to a higher average rate of duty and on the other, a proposed wholesale reappraisal of the structure of the rates of duty the net effect of which would be expected to lower average rates, the realised average of the recent past should give a fair indication of the level of receipts in 1968.

5. *Excise and Salt Taxes*—Central Bank item 6. 1968 calculated on the basis of the turnover index.

6. *Income from Properties*—

(*a*) *Government agencies.*—Central Bank item 9 (*a*) arbitrarily doubled.
(*b*) *Other.*—Central Bank item 9 (*b*) arbitrarily increased by 50 per cent.
(*c*) *Additional Housing.*—This item represents the expected interest earnings on housing loans made under the Government's housing programme.
(*d*) *Business Surpluses.*—These are derived directly from data in the Industry and Electricity Supply Chapters. As was indicated in item 2 above the liability for income tax payable by government industrial corporations is included. The other industry item is the expected interest earnings on loans to the cottage industries sector (*see* Chapter 8, Table XIV from which it is derived.)

7. *Other Revenue and Receipts from Transfer Payments.*—This is the sum of Central Bank items 3, 7, 9 and 10. It has been increased by the turnover index to obtain the 1968 estimate.

8. *Sales Tax on Sugar.*—In the Central Bank returns this item has been netted out to give a net expenditure item on food subsidies. This procedure gives a distorted picture of the true cost of food subsidies and has been discarded here, so that there is a revenue receipt from scales tax on sugar and the true subsidy on food appears on the expenditure side. The 1968 receipts from this tax have been estimated on the basis of applying the average 1957 per capita sugar consumption to the expected total population in 1968, and increasing the yield on the tax in proportion to the increase in quantities of sugar consumed. It should be noted that in some of the base years there is an additional relatively small sales tax representing the profit on the sale of flour.

9. *Balance to be met by new taxation or higher rates of borrowing.*—This is the residual item necessary to balance total receipts against total expenditures.

10. *Total Revenue.*—The sum of items 1 to 9 inclusive.

11. *Capital transfers.*—These are the expected repayments of government loans to be made under) the fisheries, small scale industries and housing programmes. Together with item 6 (*c*) and part of 6 (*d*) they are equal to the transfer payments by the private sector included in the tables in Appendix II.

12. *Depreciation Charges.*—These reflect the application of depreciation rates to the government investment outlays in the various industry sectors (see Appendix II, Table I). To the extent that they are not reflected in prices charged by the Government for its services, &c., the balancing item (9) will be understated and further revenue raising measures will have to be adopted.

13. *Grants and Foreign Borrowing.*—Central Bank items 12 and 13. The 1968 estimate is discussed in the text.

14. *Net domestic Borrowing.*—This is Central Bank item 14. The sub-classifications (*a*) and (*b* differ, however, from Central Bank usage. Item (*a*) here refers to the proceeds of loans raised from the private sector and hence excludes departmental holdings of government securities, Central Bank advances, &c., Item (*b*) includes these items in 1956-58 but in 1968 only includes an estimate of the amount of bank advances, &c., made available to the government via the Central Bank through the increase in the note issue. This increase is calculated by estimating the total note issue outstanding in 1968 by applying the turnover index to the base year. A straight line trend was fitted to these two points and the difference between the 1967 and 1968 estimates made on this basis appears in the table.

15. *Change in Cash Balances.*—Central Bank item 15. This is a short-term source of funds and has no place in the long-term calculations on which the 1968 estimates are based.

16. *Total Capital Receipts.*—The sum of items 11 to 15 inclusive.

17. *Total Receipts.*—The sum of items 10 and 16.

18. *Consumption.*—This represents government outlays on wages and current goods and services. It differs from estimates of this item appearing elsewhere in this report because it is here defined (as is explained in item 1) in such a way as to exclude a number of government departments (namely Port Commissioner, Railways, Postal, and Electricity) and to include others which are not included in the national income concept used elsewhere. There is no inconsistency between this estimate and that used elsewhere. The same index has been applied in both cases to estimate the 1968 figure. Allowing for the above qualifications, the item is equivalent to Central Bank item 17.

19. *Subsidies—Food.*—As was explained in item 8 this item differs from Central Bank item 18 (*a*) (i). It shows the total subsidies payable on food, not the net figure derived by substracting receipts from the sales tax on sugar from the total subsidies. As is explained in the text, no entry appears in Table III (i). It does appear in Table III (iii). Its size has been estimated in the manner described in Appendix III p. 47-8 below.

20. *Subsidies—Business.*—This item is the difference between the sum of the current expenditure payments by the Postal, Railways, Port Commissioner and Electricity Departments and the sum of their current receipts. It is the net loss suffered by the Postal Department (according to the Treasury Accounts) and of the Railways Department after the profits of the Port Commission and the Electricity Departments have been deducted. The calculated loss in Table 3 III is probably an understatement if intended to reflect recent trends. The 1956-58 average is an average based on an increasing trend. Thus the subsidy in 1957-58 was Rs. 46·6 million.

21. *Interest.*—Central Bank item 18(*a*) (ii). The 1968 payment is based on the assumption of an average 4 per cent. rate of interest applied to the increased domestic and foreign debt which is calculated in Table II plus the interest payments in the base year.

22. *Pensions.*—Central Bank item 18 (*a*) (iii). The 1968 estimate is derived by fitting a straight line trend to the actual payments 1953 to 1958. While government pensions in Ceylon are based on retiring salaries and while there was no general increase in basic salaries during these years, it is still probable that there is a price increase component in this trend which should be excluded for purposes of comparison with the other figures in the table which are at constant prices. No satisfactory means of making this adjustment has however been devised. It must simply be recognised that this item may be overstated in 1968.

23. *Direct Relief.*—Central Bank item 18 (*a*) (iv). Arbitrarily increased for 1968.

24. *Others.*—Central Bank item 18 (*a*) (v). Arbitrarily increased.

25. *Grants to Local Governments.*—Central Bank item 18 (*b*) 1968 calculated by applying the turnover index.

26. *Total Transfer Payments.*—Sum of 19 to 26 inclusive.

27. *Total Current Expenditure.*—Sum of 18 and 26.

28. *Investment.*—Central Bank item 21 except that 29 (*b*) below has been excluded. Government investment expenditure is derived from the plans for individual industry sectors. (*See* Table 1 in Appendix II).

29. *Capital Transfers—*

(*a*) *Acquisition Financial Assets.*—Government capital contribution to financial intermediaries such as the Agricultural and Industrial Credit Corporation. The 1968 figure has been increased roughly in proportion to total investment expenditures. This item is more narrowly defined than Central Bank item 22, which includes loans to such institutions as the Ceylon Transport Board. The investment expenditure of such bodies is included in this classification in 28.

(*b*) *Acquisition of land, grants, &c.*—These items are included in the Central Bank item 21. Acquisition by the Government of private land and capital grants to private individuals are in fact transfer payments to the private sector and are treated as such here. The 1968 figure has been obtained by increasing the base year figure in proportion to the increase in total investment.

30. *Total Capital Expenditures.*—Sum of 28 and 29.

31. *Statistical Adjustment.*—This arises because at the time of writing, while the final 1957-58 figures for government current receipts and current payments are available the capital items are as yet provisional, especially on the expenditure side. It has not been possible to correct all the original estimate figures in the light of realised expenditures with the result that a balancing item appears.

32. *Total Payments.*—Sum of 27, 30 and 31.

Table III ii

New Excise Taxes.—As explained in the text this item is meant to take account of the process of import replacement. The bulk of the estimated proceeds are derived from the application of excise tax on sugar, cement and fertilisers at the present respective customs duty rates to the expected volume of domestic production of these items plus a small additional item to cover other replaced industrial imports. This amount will be too high if the present rates of duty are lowered. Against these no allowance has been made for imposing the existing low rates of duty on much increased production of domestic foodstuff.

APPENDIX II

INVESTMENT EXPENDITURE AND FINANCE IN 1968

AS part of the process of constructing the Table (Ch. II, p. 78) which shows the expected investment outlays by industry and by the private and government sectors, it was necessary to prepare a table along the same lines for the year 1968. This in turn provides part of the information necessary for drawing up the 1968 government budget which is discussed at some length in the text. It is consequently useful, as an aid in interpreting the tenth-year financial picture, to present the investment tables from which the budget is, in fact, derived. Thus Table 2 of this appendix gives the detail of the expected government investment expenditure. To this must be added private investment expenditure (Table 3 of this Appendix) and investment through self-help schemes (demonetisation) to obtain the 1968 gross investment total, Table 1 of this Appendix. In the text of this Chapter this information has been presented simply in terms of major sectors (see Table 11 p. 110). The break-down shown in Table 1 of this appendix is derived from the planned programmes in the relevant industrial sectors.

APPENDIX II—TABLE 1

Government and Private Investment by Sectors 1968

Sector	*Demonetised*	*Government*	*Private*	*Total*
Tea	—	21	46	67
Rubber	—	19	24	43
Coconut	—	5	28	33
Specific crops	—	41	80	121
Irrigation	18	163	—	181
Fisheries	—	15	1	16
Large-scale Industry	—	280	120	400
Small-scale Industry	6	54	—	60
Electricity	—	100	—	100
Transport	14	230	25	269
Construction	—	20	50	70
Housing	67	147	227	441
Other Services	10	15	73	98
Public Administration	15	136	—	151
Total	130	1,246	674	2,050

APPENDIX II—TABLE 2

Government Investment Expenditure and Finance by Sectors, 1968

(Rs. million)

Financial Resources						*Investment Expenditure*
Government Revenue Requirements	*Business surplus*	*Depreciation charges*	*Capital transfers private and foreign sectors*	*Total*		*Investment Outlays*
249				249	Agriculture	249
2			14	16	Fisheries	16
130	113	75	16	334	Industry	334
62	38			100	Electricity	100
174		55		229	Transport and Communications	229
16		4		20	Construction	20
93		30	24	147	Housing	147
136				136	Public Administration	136
14		1		15	Other Services	15
876	151	165	54	1,246	Total Physical Investment	1,246
					Capital Account	
					Repayment of Private Borrowings*	
			150		Domestic Loan Programme	
			−45		Transfer to Private Sector	
−105			105		Net Domestic Transfers	
−150			150		Foreign Aid and Loans	
621	151	165	309	1,246	Total Receipts and Payments	1,246

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* These have already been deducted in the respective revenue requirements for individual sectors namely Fisheries, Industry and Social Investments. This reflects the method of calculation rather than a real balancing of receipts from particular sectors against payments for those sectors.

APPENDIX II—TABLE 3

Private Investment Expenditure and Finance by Sectors, 1968

(Rs. million)

Financial Resources				Investment Expenditure		
Net-savings	*Depreciation*	*Gross savings*		*Investment outlays*	*Net capital transfer to Government sector*	*Gross private investment outlays*
108	78	178	Agriculture	178		178
5	10	15	Fisheries	1	14	15
86	50	136	Industry	120	16	136
			Electricity			
15	10	25	Transport and Communications	25		25
34	16	50	Construction	50		50
171	80	251	Housing	227	24	251
			Public Administration			
49	24	73	Other Services	73		73
468	260	728	Total Physical Investment	674	54	728
			Capital Account			
			Repayment Borrowing from Government Sector*			
			Domestic Loan Programme		150	150
			Less Receipts from Government Sector		–45	–45
105		105	Net Capital Transfers		105	105
			Foreign Investment†			
573	260	833	Total Receipts and Payments	674	159	833

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* These have already been added to gross expenditure in the industrial sectors. See also the note to Table 2 of this Appendix.

† As it is not possible to make any reasonable estimates of this item it has been left blank. To the extent that it is positive, the need for private savings is reduced.

APPENDIX III

METHODS OF ESTIMATION OF RICE SUBSIDY

General Note

THE losses on the purchase and distribution of rice paid by the Food Commissioner fall into two parts. First a cost to him of the producer subsidy (under the G. P. S.), which differs from the subsidy received by the producers themselves largely because of the milling and transport, &c., costs of converting paddy into rice which are borne by the Commissioner, and secondly a consumer subsidy which is paid on all imports handled by him and on rice purchased under the G. P. S. The rate of subsidy in the first case is the difference between his purchase price of domestic rice (as distinct from paddy) and the landed import price. The rate of the consumer subsidy is the difference between the landed import price and the subsidised selling price. In the present calculations these rates of subsidy, derived from the Food Commissioner's *Administration Report* 1956-57, are applied to estimates of consumption, domestic production and imports which are derived from the Agricultural Chapter of this report. It should perhaps also be remarked in this general note that the estimated 1957-58 actual subsidies are substantially higher than those for 1956-57 or those calculated for 1959. As will become apparent in the discussion to follow this discrepancy can arise from three sources—an increase in the total volume of consumption, an increase in the proportion of domestic paddy bought under the G. P. S. or because of an increase in stocks which is included as part of the "loss" on rice purchases and sales in the Commissioner's reports but which is excluded here as it represents investment expenditure and not a transfer payment.

Details of Calculations

Items 1, 2 and 3 are derived by fitting straight line trends to the 1957 and 1968 estimates prepared for the Agricultural Chapter. The units used there are bushels of paddy which are more relevant for agricultural policy than tons of rice. Partly to maintain conformity and partly for the same reason the Commissioner's data both in terms of output and price have been converted into terms of bushels of paddy.

Item 4.—In 1956-57 the Food Commissioner bought, in terms of paddy, 10·3 million bushels which is 15 per cent. of total supplies (item 1). As was mentioned in the general note it is expected that with the replacement of imports by domestic production, with increased urbanisation and with an increased surplus for sale this proportion will rise. This line for 1959-68 is considered to be a minimum representation of this trend.

Item 5 is calculated by applying the ratio in item 4 to the domestic output series (item 2).

Item 6.—The rate of subsidy is calculated by converting the average purchase price paid by the Commissioner for domestic rice (Rs. 1,074 per ton in 1957) into rupees per bushel (Rs. 14·60). From this is deducted the average import price (Rs. 537·2 per ton) also converted into terms of a price per bushel of paddy (Rs. 7·34). The difference (Rs. 7·26) is the rate of producer subsidy paid by the Food Commissioner.

Item 7 is obtained by multiplying the subsidy price calculated in 6 by the subsidised output series calculated in 5.

Item 8.—The volume of output which receives a consumer subsidy is that handled by the Food Commissioner. It consists of two parts—imports and domestic rice purchased under the G. P. S. and is thus, for the purposes of this calculation, the sum of items 3 and 5. The consumer subsidy is paid however, only when rice is sold. It is thus necessary to correct for situations where urchases are greater or less than sales, i.e. when there is an increase or decrease respectively in stocks. n 1957, according to the Food Commissioner's reports and additional data supplied by him to the Planning Secretariat there was an increase in the stocks of imported rice amounting to 14·4 million bushels of paddy equivalent and 8·1 million bushels of domestic paddy. It is for this reason that the 1957 items 3 and 5 do not equal the total given in item 8. In the period 1959 to 1968 no allowances are made for increased stocks. This has been done partly because it would require an additional calculation which would only complicate the arithmetic and partly because it would be irrelevent in a discussion of the costs of transfer payments for the cost of acquiring stocks is investment not a transfer payment. The transfer payment only arises when the stocks are actually sold.

Item 9.—The rate of consumer subsidy is the difference between the price of imports landed in the Food Commissioner's Stores, already calculated (Rs. 7·26) in item 6, and the subsidised selling price (40 cents per measure of rice) when the latter is converted into terms of bushels of paddy (Rs. 12).

Item 10 is calculated by applying the rate of subsidy (9) to the calculated output given in 8.

Item 11.—The sum of items 7 and 10.

Item 12 is the cost of the additional volume of stocks of imported rice and domestic rice (given in item 8) multiplied by the import price (7·34) and the domestic purchase price (14·60) respectively.

Item 13 is a residual item and is taken to mean costs borne by the Food Commissioner in handling, storing and transporting rice. It is a small item and does not affect the main calculations at all significantly. As it is here deemed a handling cost it is assumed to vary with the volume of subsidised rice (item 8).

Item 14.—is the sum of items 11 and 13 and represents the total cost of the schemes for subsidising rice.

Item 15.—This item, for 1956-57 only, is the Food Commissioner's total published loss.

Item 16.—If all domestic output were purchased by the G. P. S. the amount of producer subsidy paid would equal item 2 multiplied by the rate of producer subsidy (item 6).

Item 17.—If all domestic output were subsidised under the G. P. S. this would mean that the consumer subsidy would be paid on total supplies (item 1) and the amount would be those supplies multiplied by the rate of consumer subsidy (item 9).

Item 18.—This handling charge would now vary with item 1 instead of item 8.

Item 19.—The sum of items 16, 17 and 18.

CHAPTER 4

INSTITUTIONAL FACTORS

IN the preparation of the Plan the objective of attaining a socialist pattern of society has been accepted. However, the making of specific recommendations regarding changes of an institutional character is outside the scope of this report. The Plan itself has been drawn up largely in physical terms. It is concerned essentially with the future development of the economy and the means to higher output, employment and standards of living. It is, however, necessary to offer some broad remarks on three institutional questions on account of the special implications they have for the success of the Plan. These relate to the relevant roles of the public and private sectors, changes in rules and regulations governing the inflow of foreign capital and investment and changes in labour-management relationships.

The Extension of the Public Sector·

It is implicit in the Plan that the institutional pattern will not remain static. The Plan is essentially concerned with growth. In this process new assets and new enterprises will be created which will naturally have far-reaching affects on the institutional "balance". There can be no doubt whatsoever concerning the direction in which this balance will be altered. The Plan calls for a tremendous extension in the economic activities of the State. This extension is not merely the outcome of a heightening of activities in traditional fields—irrigation and power, roads and railways ports and harbours, schools and hospitals and so on. It is more significantly the result of direct government participation in the most important of the new sectors that future development will create—industry. The reason for this from a planning point of view is partly a pragmatic one. When development is urgently needed, when it is essential to the economy that a new enterprise has to be established, it is not possible to await or depend upon the initiative of private parties. But the result is of decisive significance. Over the period of the Plan, for instance, Government investment will rise from 5 per cent to 14 per cent of national income. Private investment, on the other hand will rise only from 7 per cent to 8 per cent. It is likely that the trend will continue in the period beyond. It is essentially through such growth made possible by the active intervention of government in promoting development that the objectives of a socialist pattern of society can most effectively be realised.

Despite the rapid extension of the public sector, hower, the Plan must take into account the conditions of a mixed economy. It therefore ascribes a positive role to the private sector. Although in terms of the rate of growth the private sector will be outstripped by the public sector it will, in an absolute sense, expand. The Plan expects private firms and productive enterprises to increase their production, to step up their levels of investment, to improve their efficiency in many directions and to contribute substantially to the financing of the Plan. It assumes, by implication, that Government policies would enable them to do so. A mixed economy essentially means co-operation and partnership between the public and the private sectors.

NATIONALISATION

In discussing the extension of the public sector in the context of the Plan some comments on the nationalisation of existing enterprises are in place. The Plan does not postulate that there should be no nationalisation of private enterprises over the 10-year period. Nor does it require such nationalisation for its success. Decisions about nationalisation will need to be taken on the basis of other factors political as much as economic. All the same nationalisation can have certain implications for the Plan and it is important to be aware of them.

The possible implications of nationalisation to the Plan are of two types —the direct and the indirect. The direct implications largely relate to questions concerning efficiency in the nationalised enterprises. The indirect implications concern effects felt outside the nationalised sectors themselves. It is necessary to point these out.

THE DIRECT IMPLICATIONS

The nationalisation of existing enterprises can clearly affect the Plan if it has repurcussions on the efficiency of these enterprises. The importance of this factor will naturally depend on the importance of the sectors or enterprises to be nationalised. There are at least three ways in which changes in efficiency can affect the Plan—through effects on output, on foreign exchange earnings, and on surpluses for reinvestment. The significance of each of these factors does not need detailed elaboration. The Plan lays great store by an increase in output in important sectors of the economy, e.g., the plantations. Clearly a change in output or efficiency in these sectors—even for some years of the Plan—could affect the Plan as a whole and its long-term objectives. Similarly, the success of the Plan, in virtually all fields depends on the availability of foreign exchange. Both machinery and equipment and consumer goods are needed for the success of the Plan. Again, the Plan postulates a progressive expansion in the volume of investment over the next 10 years. A major source of additional investment resources is the surpluses from the various sectors and enterprises of the economy.

In considering nationalisation, in the context of the Plan, it is necessary, therefore, to pay attention to all these factors. As mentioned, their importance would depend on the importance of sectors and enterprises concerned. Where nationalisation does not affect output, foreign exchange earnings or surpluses for reinvestment, it would not have any direct implications for the Plan. Where the effects are favourable the Plan would benefit. On the other hand if the effects are adverse they can seriously undermine the entire Plan and the process of development it seeks to achieve. It is not only through changes in efficiency that some of the factors mentioned above are affected. They can also be influenced by changes in prices and wage policies that nationalisation may involve. In any event nationalisation must not be an instrument for reducing surpluses through unduly raising wages or lowering prices to consumers.

THE INDIRECT IMPLICATIONS

The indirect implications of nationalisation for the Plan are those felt outside the nationalised sectors or enterprises themselves. They relate mostly to the financing of the Plan, to questions of managerial and executive skills and to the performance of the private sector.

In regard to finance, it should be clear that compensation payments will make claims on the financial resources of the Government additional to those imposed by the Plan. If nationalisation is decided upon a choice may have to be made between raising these additional resources and scaling down the Plan.

The expansion in the public sector provided for by the Plan will place heavy strains on the Government's resources of managerial, administrative and technical skills. The ability of the administrative machine to expand fast enough to meet the demands imposed upon it may, in the last analysis, prove the limiting factor in the implementation of the Plan. The balance of advantage in imposing any further loads on this machine must, therefore, be carefully weighed. With nationalisation it may, of course, be possible to utilise the existing managerial and other skills of the private sector. In this event the burden imposed on the government's resources of these skills need not be great. Much would depend on the specific organisational changes involved.

As mentioned before the Plan requires maximum efforts from the private sector within the role ascribed to it. The extent to which nationalisation could impede the performance of the private sector would depend upon the manner in which it is conceived and implemented. It is, therefore, important to ensure that uncertainities are avoided and appropriate methods of compensation adopted.

Finally, it is necessary to emphasise that in most sectors the alternatives are not limited to nationalisation on the one extreme and the preservation of the existing patterns on the other. A variety of reforms may be possible which would satisfy national objectives without exerting disruptive effects on the Plan. As mentioned comments on these are outside the scope of this Report. They nevertheless merit careful consideration.

Foreign Capital and Investment

The Plan will inevitably involve large outlays in foreign exchange. A large part of the development goods (machinery, fuel, even raw materials in certain cases) will have to be imported. The local production of these goods will not be possible at least in the initial stages, because of lack of physical resources or smallness of the market. High level managerial and technological skills will also have to be largely obtained from abroad. The domestic expenditure on investment will also have a significant foreign exchange component in the sense that the incomes it will generate will demand additional consumer imports. The extent to which the economy will be able to meet the aggregate need for foreign exchange arising from these factors (by expanding exports, reducing or replacing imports, and drawing down its accumulated exchange reserves) will have a limit. Consequently, if a high rate of development is to be realised, the economy must be able to obtain additional foreign exchange, whether it is in the form of loans, equity capital or gifts. This is a fundamental limiting factor to development that must not be forgotten.

The present Plan provides for an investment of Rs. 13,601 million. Of this it is estimated that the country's own savings could without too much strain provide Rs. 12,326 million. Thus for the investment programme alone, Rs. 1,275 million would be needed from foreign sources. If this amount is not obtained, domestic savings would have to be raised further, which would involve a very severe strain on the economy. If more foreign investment is available, there would be a chance of overfulfilling the Plan, or reducing its real cost in terms of restrains on consumption.

In view of the important role which foreign capital thus plays in development, it is important to devise policies and measures which will attract a generous flow, yet safeguard the country's interests fully.

The amount that can be expected in outright grants will obviously be extremely limited. Foreign capital receipts will be mainly loans and equity capital. The advantage of equity capital (direct investment) is that it will automatically bring with it managerial and technical skills. But its cost to the country in remitted profits may be higher than the interest cost of loan capital. It may also, through reinvestment of profits, add to its original size, creating for the country larger liabilities in profit remittances and capital repayment. Again, it would not, unlike loan capital, amortise itself according to any definite time schedule. There is, however, no reason why foreign capital should over-stay its need and the country continue to bear its costs when it could profitably replace it by domestic capital. Loan capital which will have to be obtained mainly from governments and international agencies, will be free from these disadvantages, but it will not necessarily bring with it constructional and operational skills.

It has been suggested that because of its various drawbacks, equity capital should be discouraged or even ruled out altogether, and only loans be sought. This would not be wise. This view rests on two assumptions neither of which is quite correct. It assumes first that given our own capital or borrowed foreign capital, there will be no difficulty in importing appropriate skills to put up and run the projects till these are taken over locally. The situation in this respect is undoubtedly improving, indeed, devices like the managerial contract which are mentioned later are offering promising solutions of the problem, but still the fact remains that in many fields quick and efficient results could only be obtained if foreign investors were allowed to come in as equity holders, at least for a certain period. Secondly, it assumes that it will be impossible to devise terms which will safeguard national interests and yet attract a generous flow of private foreign investment. This does not seem to be so. The fact that private foreign investment is still flowing into many independent countries shows that mutually acceptable terms can be evolved.

Government issued in October, 1958, the following broad statement outlining its policy regarding private foreign investment:

" Government policy towards foreign private investment

" 1. It is Government's policy to welcome private foreign investment in fields which will strengthen the country's economy. The Government will approve such investment in projects—

(I) Where local capital has not already effectively established itself or is not likely to do so in the near future ;

(II) Where there is collaboration with local private enterprise, which collaboration however can be dispensed with, if local enterprise is not forthcoming or if the foreign private enterprise undertakes the manufacture of products for export under a trade name of wide usage ;

(III) Where there will be progressive domestic manufacture eliminating ultimately all imports to the most practicable extent.

(2) In order to encourage investment in the private sector, it is Government's active policy to provide incentives and concessions. The general principle is to make such concessions applicable to both the establishment of new industries and the expansion of industries in spheres which are approved by the Government. The concessions themselves take such forms as the granting of tax holidays, of tariff protection, of adequate depreciation allowances and of tax deductions for expansion. When a foreign investment is approved by the Government, it will be accorded the same treatment with regard to concessions and protection as that given to domestic private enterprise.

> "3. Protection is afforded to private industry through the Customs tariff and through the operation of the Industrial Products' Act. In several instances Customs duties had been raised with the protective end in view.
>
> "4. Foreign private enterprise has the assurance of Government that it will be permitted eventual repatriation of capital (including appreciation thereof) and the remittance of dividends.
>
> "5. In order to encourage foreign private investment in this country the Government has decided to give an assurance that it will not, for the next 10 years, consider the question of nationalising any new private foreign investment in this country."

The statement clarifies most of the issues of importance to the foreign investor, but only in a general way. Many investors, particularly those who contemplate large commitments, would like to know more precisely their rights and obligations. It would be desirable also from the point of view of the country to ensure that foreign participation will be only for a time, and that as and when local capital is available, the foreign capital will be repatriated. It will be impossible to cover these and other relevant points fully and precisely within the frame of a general policy statement or a general foreign investment act. While such statements or laws would be greatly useful, many investors would like to have the terms of investment more firmly and clearly defined. For this purpose we would suggest that the Government explore the possibility of the device of "management contracts" with foreign firms. The device in one form or another appears to have been tried successfully in other countries.

Under it, the foreign firm would only undertake to construct the project and operate it (on stipulated terms) for a specified period. It would also undertake during this period the training of Ceylon nationals, so that the take-over may be smoothly effected. The contract might also provide for credits to be given by the foreign firm for the purchase of machinery and tools.

In many cases, however, it would be desirable to allow the foreign firm equity ownership, partly or wholly, in order to give it a stake in the business. Joint ownership of course, would be preferable to complete ownership by the foreign firm. In these cases the contract would specify the period after which the foreign ownership would be transferred to local ownership (public or private) and the conditions governing the transfer. The period, of course, should be long enough to allow the enterprise to reach maturity and the foreign owner to enjoy a reasonable share of the returns.

It is suggested that the principle of the management contract be used wherever possible. Perhaps a model contract may be prepared by the Government after consulting business and legal opinion. This could then serve as a basic pattern to be used in negotiations with foreign investors. Individual agreements or contracts with such investors could embody, where necessary, variations on the basic pattern.

A device of this type would go far towards reconciling the interests of the foreign investor and of the country and promote an increased flow of capital and skills. For the foreign investor it offers the security, not otherwise available, of a firm and legally binding agreement with the Government. He also retains control and a stake in the business until he is bought out. For the country it will ensure that foreign capital does not overstay the period of its need.

Labour-Management Relationships

Satisfactory labour-management relationships are vital for development. Whatever the increase in capital investment or the improvement in organisation and methods of production, their effect on production and development would be restricted or even nil if labour does not co-operate fully. A strike, for instance, may give a great blow to the growth of output. A rise in wages when productivity per worker is not showing any signs of increasing, would diminish the industry's power to produce a surplus and hence its possible contribution to further development. On the other hand, even if there is no increase in capital equipment, labour by simply working longer or harder might produce a bigger output. This need not mean a longer working day. Aggregate man-hours may be increased by adopting multiple shifts. In an economy which is capital-short and labour-abundant, this should be particularly important, since it will not only increase aggregate output (plant depreciation would not rise proportionately) but also expand employment. Even if all costs rose proportionately, there would be a net gain to the economy in the form of greater output per unit of time.

It must be stated at the outset that the whole context of labour problems will change with the realisation of the Plan. As long as production is static, the scope for increasing the income of labour is extremely limited. This difficulty automatically disappears in an expanding economy where labour can share in increasing productivity.

Labour discontent may spring from many causes. But in most cases they are related directly or indirectly to demands for higher wages. Many factors should be weighed in dealing with this demand, such as its welfare and justice aspects (labour has a right to a civilised living), its effects on output (a rise may stimulate a more than proportionate increase in output), its effects on employment (which may be reduced) its effects on prices (which may be inflationary) and its effects on foreign trade (it may raise costs of production of export goods and affect their competitive position in the world market). While none of these factors should be ignored, a country which has embarked on an ambitious plan of development must obviously give special attention to the effect of any wage revision on production and capital accumulation. A rise in wages when productivity per worker has not changed, means only a redistribution of the existing output between workers and owners. The redistribution may be quite justifiable on social grounds of welfare and justice, but since wage incomes are very largely spent on consumption, the aggregate saving of the nation may fall impeding development. However, whatever the case for or against redistribution of existing incomes, there can be no doubt that labour has a right to share in increased productivity. Here the objective of wage policy from the development angle should obviously be to ensure that while labour gets the appropriate increase in income, it also, like all other classes, diverts to development a substantial part of it. The diversion might in theory be voluntary, but could only be made certain through devices like deferred wage payments, compulsory contributions to provident and invesment funds, &c. The wage so diverted, would of course, be a part of the workers savings. If wage increases are to be linked in this manner to productivity increases, methods and instruments for implementing this policy must be devised.

Labour in the country which is ably led will understand the need for this new attitude towards wage revisions which development calls for. Labour is a partner in the Plan and going to be one of its most important beneficiaries. There is also no doubt that it realises that no development can take place unless every section of the community allows a part of the output it helps to produce to be reserved for development. Actually, real wage restraints in one form or another have been indispensible for development in every country of the world undertaking rapid development.

There is, of course, no question of imposing a code of conduct on labour. Labour must be wooed rather than fought. Consequently, there would be no question of weakening trade unionisms. Indeed, a strong and responsible trade union movement will be a great help rather than a hindrance.

Government realises the importance of the question and has already appointed a Commission to examine the existing wage structure and make recommendations on wage policy with special reference to the needs of economic development. This, however, does not mean that nothing should be done till the Commission submits its report. What is important is that labour and management must have greater opportunities for arriving at agreed decisions themselves ; for without such agreement no policies recommended by the Commission would have any sanction. Instruments (joint consultative bodies, &c.), and procedures for that purpose may immediately be considered. Attempts may also be made to bring employers and employees together at trade or national levels for exploring the possibility of concluding industrial truce agreements for specified periods.

An institutional device which may do much to enlist workers' interest in development and to promote industrial peace is the proposal for a Development Savings Bank[1] placed before this council by one of its members, Mr. C. Loganathan. The chief objectives of the scheme are to increase savings and mobilize them for development, by offering the small-saver (particularly the worker) an opportunity to invest in equities (thus giving him a stake in development and diffusing stock ownership) and creating a new investment organisation which would neither strictly belong to the public nor the private sector, and which may be a good medium for channelling to development foreign loans and gifts. Both as an investment institution and as an instrument for promoting industrial peace, the scheme would seem to deserve careful consideration by the Government.

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[1] *Development Savings Bank.* by C. Loganathan. Published by the Ceylon National Council —I. C. C., 1959

PART TWO

Sector Programmes

CHAPTER 5

THE PLAN FOR TEA, RUBBER AND COCONUTS

THE Plan postulates large foreign exchange resources. Foreign borrowing apart, they can be obtained by expanding exports and savings on imports. The pursuit of both these courses must therefore play a major part in development strategy. Fortunately, the scope in each case is considerable. The Plan makes the fullest provision for the domestic production of import substitutes, both agricultural and manufactured. These aspects are discussed in subsequent chapters. The present chapter is concerned with the increasing of export earnings through expanding the output of Ceylon's present export staples—tea, rubber and coconuts.

The basic aim of the expansion programme for tea, rubber and coconuts is to increase the total value (at constant 1957 prices) of the output of these crops by 32 per cent between 1957 and 1968. The programmes are essentially for replanting and rehabilitation. But there is also some provision for extending acreages. However, this would partly be offset by the diversion of certain areas under tea and rubber to other crops.

In the case of tea and rubber, technical improvements have evolved new high yielding strains which will considerably increase output per acre. In tea it is expected that the yield from better strains and vegetative propagation could be raised on average to 1,600 lb. per acre as against the present average yield on estates of 771 lb. In rubber the yield from new strains could be raised on average to 1,100 lb. per acre. The present average yield from estates is 375 lb. The replanting of tea and rubber acreages could thus yield rich dividends. There is no comparable technical development in the case of coconuts. But the output of coconut lands has been affected by senility and an increase in output can be brought about by replanting with good quality seedlings. Here again the yield per acre could rise on average to 3,000 nuts as against the present average yield of 2,152 nuts. In the case of tea and coconuts again, there are factors other than replanting which will also contribute towards an increase in output. Thus the tea programme envisages further gains to output through the continued application of fertilisers. It also provides for the improvement of small holdings through a rehabilitation scheme. The coconut programme too aims at extending the use of fertilisers.

The Problem of Markets

There are two general questions arising out of these programmes which merit comment at the outset. The first is whether a sizeable increase of output is justified by market prospects. The second relates to the need for Government assistance to those industries which have shown themselves in the past to be self-reliant.

On the question of markets, it is important to emphasise that not merely an increase in output but also a reduction in production costs is implied by the replanting and rehabilitation schemes. Even if an increase in output was undesirable from the market angle this is not a sufficient argument against replanting or rehabilitation. It would merely suggest a replanting programme combined with a scheme to reduce acreages and the diversion of the surplus areas to other uses. In this way total output could be maintained at present levels whilst production costs per unit fall.

However, the market question does not appear to warrant pessimism. In the case of rubber Ceylon's share in world trade is of a minor order and any practicable increase in local production could hardly be of significance to the world supply position. With coconut products it should be remembered that if output is unchanged even the present quantities exported would decline as local consumption rises with the growth of population. The possible gains from replanting and rehabilitation may in fact do little more than offset this decline.

In the case of tea, the position is admittedly different because of the importance of Ceylon's position in the world market. However, there are several considerations which justify the risks involved. The prospects for future consumption have to be viewed against a background of rising population and income levels in the consuming countries. It is not only in the importing countries that consumption is likely to increase. Rising population and income levels in India, the other major exporter of tea, will continually impart a pressure on its exportable surplus through higher local consumption. Over the past twenty years Ceylon's tea output rose by about 62 per cent. from 247 million lb. to nearly 400 million lb. (largely through the increased application of fertilisers). Over the last 10 years alone, since 1948, output has expanded by 34 per cent. These increases have not had the catastrophic effects on prices that pessimistic assumptions would have suggested. They have taken place against a rising trend of world consumption. Intermittent drops in prices associated with cyclical fluctations must, of course, be expected. But it is essentially the trend which is of importance to long-term planning.

Tea production is being expanded in other producing areas. The prospects of over-production do not appear to be a deterrent to these countries. This new production is sometimes used as an argument against expanding output in Ceylon. This, however, is singularly defeatist. There is no reason as to why Ceylon with its well established and experienced tea industry should refrain from sharing in the growing world markets. Admittedly total production can outstrip demand. But in this situation the first casualties would be the high cost producers. With the reduction in costs through replanting and rehabilitation Ceylon should be able to bear a certain amount of price reduction if necessary.

The replanting and rehabilitation programmes for tea extend over many years. The expected addition to total output from these measures within the next ten years is not in any case exceptionally large. Ceylon could thus watch the conditions of the tea market and modify its expansion programme if necessary. As mentioned, the real alternative to producing more tea is to replant a reduced acreage and to convert the remainder to other uses. This raises the question of superior alternatives. At present alternative crops do not promise to be more economic than tea except in the case of marginal small-holdings. The present programme does in fact envisage the diversion of about 20,000 acres of small-holdings to other uses.

The second point concerns governmental assistance. The chief reason for a government assisted scheme of replanting and rehabilitation is that it is likely to achieve results directly and quickly. Improvements to the productivity of tea, rubber and coconut lands are a matter of national importance, and could not be made to depend exclusively on the incentives provided by market forces. In the case of the coconut industry direct assistance is made necessary by the economically weak position of many producers. With tea and rubber the position is somewhat different since large and well-organized estates are more common. But here the subsidies to replanting are financed out of a cess on the exports of these products. The imposition of a cess or its equivalent for general revenue purposes may not leave the industry in possession of sufficient funds for replanting. On the other hand there is no guarantee that any additional funds made available through a lowering of taxes or levies would be applied to replanting. The replanting schemes ensure that for each of these industries the recovery of the monies paid through cesses is conditional on replanting.

The General Character of the Replanting and Rehabilitation Schemes

The main features of the replanting and rehabilitation schemes are described in the Agricultural Plan of the Ministry of Food and Agriculture. In summary they are as follows:—

TEA

The programme for tea envisages the replanting of estates and the rehabilitation of small-holdings. It will effectively commence in 1959. The average cost of replanting an acre of tea is estimated at around Rs. 4,000.

Under the programme the Government will offer a subsidy to estates in the form of a grant of Rs. 2,500 per acre, free of income tax. The subsidy will be given in instalments as follows :—

The first and largest instalment of Rs. 1,000 after the uprooting of the old tea and the preparation of the land for replanting ;

The second instalment of Rs. 750 after the completion of replanting and of soil conservation measures ;

The remainder in 3 equal annual instalments of Rs. 250 on condition that manuring and maintenance are satisfactory.

For small-holders the programme is one of rehabilitation. The replanting of small-holdings is not feasible on account of such factors as (*a*) the inability of small-holders to sustain a prolonged loss of income, (*b*) the common practice of interplanting with other crops, and (*c*) the absence of the requisite technical skills. Small-holders are offered a subsidy of Rs. 650 per acre (also in instalments) to cover such operations as the supplying of vacancies, soil conservation and the application of fertilisers. The subsidies are given on the following basis :—

(*a*) a subsidy of Rs. 300 per acre for the supply of vacancies in 3 annual instalments, one of Rs. 150 and two of Rs. 75 each ;

(*b*) a subsidy of Rs. 100 per acre in 2 annual instalments for soil conservation ; and

(*c*) a subsidy of Rs. 250 per acre in 5 annual instalments for the purchase of fertilisers.

Small estates of less than 100 acres are also eligible for this subsidy.

For the financing of the entire replanting and rehabilitation programme an additional cess of 4 cents per lb. is levied on all tea exports.

RUBBER

The Rubber Replanting Scheme was launched in 1953. Under this scheme grants as stated below are offered for the replanting of uneconomic rubber lands :

(i) Rs. 700 per acre replanted for estates of 100 acres and above ;

(ii) Rs. 900 per acre replanted for estates between 10 and 100 acres ; and

(iii) Rs. 1,000 per acre replanted for small-holdings under 10 acres in extent.

It is estimated that the total cost of replanting is Rs. 1,500 per acre for estates and Rs. 1,000 per acre for small-holdings. The subsidies are spread over 4 instalments in the case of estates and 5 instalments in the case of small-holdings. The first instalment immediately follows the uprooting of old rubber, the second the planting of new plants, whilst the third and subsequent instalments are paid annually provided by the replanted areas are maintained satisfactorily. An inspection by a competent Estate Superintendent precedes the payment of each instalment.

COCONUTS

The programme for coconuts comprise :

(*a*) A fertiliser subsidy scheme. This was launched in 1956. Under the scheme owners of coconut lands over 20 acres received a subsidy of 1/3 the cost of fertiliser used whilst small-holders owning 20 acres or less receive a subsidy of 1/2 the cost.

(*b*) A scheme to assist the replanting of superannuated acres through subsidizing the cost of planting materials and of fencing. Seedlings costing Re. 1 from nurseries are supplied by Government at 35 cents. The market cost of fence posts are around Re. 1.80 each whilst barbed wire costs about Rs. 70 per cwt. It is proposed to give a subsidy of Re. 1 on each fence post used for replanting by estates over 20 acres and Re. 1.30 on each post used by small-holdings under 20 acres. For barbed wire a subsidy of Rs. 50 per cwt. is proposed for both estates and small-holdings, thus bringing down the price to about Rs. 20 per cwt.

The Economic Implications of the Programme

It is necessary to work out the implications of the programme for tea, rubber and coconut in terms of the major factors of relevance to planning and development. The results of these exercises are presented in the tables at the end of this chapter. The present section summarises some of the broader conclusions which emerge.

The data contained in the tables are essentially estimates. They seek, on the basis of the replanting and rehabilitation programmes, to estimate the changes in output, investment, employment and in certain other variables over a ten-year period. Though every effort was made to adopt assumptions that appeared realistic these could still be improved upon in the light of better knowledge. They should, therefore, be subject to continued revision and improvement.

I. THE PHYSICAL SCALE OF THE REPLANTING AND REHABILITATION SCHEMES

The tables below indicate the extents under each of the crops that would be affected by the replanting and rehabilitation programmes by the end of the 10-year period 1959-1968 :

TABLE I

Replanting Programme (1959–68)

(Acres '000)

	Acreage in 1959 1	*Estimated acreage in 1968* 2	*Acreage replanted prior to 1959* 3	*Additional acreage to be replanted 1959-68* 4	*Estimated acreage replanted by 1968* 5	*(5) as a % of (2)* 6
Tea						
Estates	490	503	—	67	67	13·3
Small-holdings	78	60	—	—	—	—
Total	568	563	—	67	67	12·0
Rubber						
Estates	464	428	97	140	237	55·4
Small-holdings	187	178	35	80	115	64·6
Total	651	606	132	220	352	58·1
Coconuts						
Estates	1,100	1,130	126	250	376	33·3
Small-holdings						

TABLE II

Rehabilitation Programme (1959–68)

(Acres '000)

	Acreage in 1959 1	*Estimated total acreage in 1968* 2	*Acreage under rehabilitation schemes prior to 1959* 3	*Additional acreage to be rehabilitated 1959-68* 4	*Total acreage rehabilitated in 1968* 5	*(5) as % of (2)* 6
Tea						
Small-holdings	78	60	—	60	60	100
Coconuts*						
Under assumption (A)	1,100	1,130	280	120	400	35·4
Under assumption (B)	1,100	1,130	280	400	680	60·2

Note.—Small-holdings comprise units under 20 acres in tea and units under 10 acres in rubber and coconuts. The acreage figure for 1968 takes account of moderate extents of new land to be brought into cultivation.

*Assumption (A) is on the basis of the target set out in the Agricultural Plan for the application of 50,000 tons of fertiliser over 400,000 acres.

Assumption (B) envisages an expanded programme aiming at the application of 85,000 tons of fertiliser over 680,000 acres by 1968.

The figures above include areas where the replanting or rehabilitation operations will have commenced. They must not be taken as indicating the areas where the processes would have been completed and, still less, where they would be yielding results. It will be seen that by 1968 12.0 per cent of the total 1968 acreage under tea, 58.1 per cent of the acreage under rubber and 33.3 per cent of the acreage under coconuts will be brought within the replanting schemes. In the case of tea and rubber, a small proportion of the existing acreage will be lost through diversion to other crops.

The differential rates for the three industries are partly due to the earlier starts which the rubber and coconut programmes have had. There are essentially two factors which determine the maximum rate of future replanting. These are finance and availability of planting materials.

In the case of tea the latter is the chief determinant over the next 10 years. (On the financial side, as will be shown later, the expected receipts of the proposed tea subsidy fund would exceed the outlays.) As stated in the Agricultural Plan, the target of replanting (30,000 acres over a six-year period)—

> " has been fixed after very careful consideration and after discussion with the Tea Research Institute, the Planters' Association, the Low-Country Products Association and other representatives of the planting industry. This target of 5,000 acres a year might appear relatively modest in relation to the area being replanted under the Rubber Replanting Scheme (between 20 and 25 thousand acres a year) but it is doubtful whether a more ambitious target can be reached. In the first place, the replanting of tea involving as it does the uprooting and replanting of several thousands of individual plants per acre, is a much more complicated and expensive operation than the replanting of rubber which involves only the uprooting and replanting of about 200 plants per acre. In the second place, tea planting material will not be available as abundantly as rubber planting material was available when the Rubber Replanting Scheme was launched .... The first task, therefore, is to multiply the limited quantities of vegetatively-propogated planting material available in the Island to meet the needs of the proposed Tea Replanting Scheme. The Tea Research Institute has estimated that if the estates lay out their multiplication nurseries in 1958, then sufficient high grade planting material will be available in about two years time to replant at the proposed rate of 5,000 acres per year."

In the estimates presented here the proposed annual rate of replanting is progressively stepped up after the six-year period to about 10,000 acres by 1968. This was done in consultation with the Tea Controller and takes into account the progressive improvement in the availability of planting material.

The Rubber Replanting Scheme originally covered the period 1953-57. It has since been extended for a further period of five years 1958-62. During this second period it is intended to replant a total of 110,000 acres at an annual rate of approximately 22,000 acres. When the areas previously replanted are added this means that a total of about 200,000 acres would have been replanted by 1962. This area covers the entire extent of uneconomic rubber land considered suitable for replanting. Moreover, the estimates presented here postulate a continuation of the replanting programme even after 1962. This implies an extension of the process beyond the strictly " uneconomic " area. Such a step is in principle justified since the ultimate objective should be the replanting with high yielding strains of the entire rubber acreage. In any case continued replanting will be made necessary by the ageing of trees in even the economic area. It has, therefore, been assumed that the replanting rate of 22,000 acres a year will be maintained up-to 1968. The rate itself largely depends on the availability of finance. Up to 1962 the major portion of the funds will accrue through the Economic Aid Agreement with China. The sources of finance would have to be worked out for the period thereafter. Where the rate of replanting is not limited by physical factors such as the availability of planting material it is necessary from a planning point of view to determine the appropriate rate in the context of the alternate uses of finance. There may well be a case for speeding up the rate of replanting beyond that envisaged here.

Similar issues arise in connection with the rates of replanting set out in the coconut programmes. The Agricultural Plan envisages a replanting rate of 25,000 acres a year until 1970. This rate has been used in the estimates here. It would appear, though it has not been specifically stated, that the availability of seedlings from nurseries is the determining factor. The practicability of stepping up the rate should nevertheless be explored further. With a prospective rise in local consumption through population growth a substantial increase in coconut output is needed if exports are to rise.

II. INVESTMENT OVER THE TEN-YEAR PERIOD

The total investment in the tea, rubber and coconut industries as provided for in the Plan is as follows:—

TABLE III

Total Investment in Tea, Rubber and Coconuts*, 1959-68

		Rs. M.
1.	Replanting and rehabilitation	762
2.	New Land	85
3.	Buildings and machinery	304
4.	Total	1,152

* Excludes stocks and the rehabilitation of the coconut areas through the fertiliser scheme.

It is estimated that the total of Rs. 1,151 million above would be broadly distributed between Government and private outlays as follows:—

Government outlay*	Rs. 391 million
Private outlay	Rs. 760 million

*Includes Rs. 5 million to cover the agricultural cost of tea lands developed by the State Plantation Corporation.

A broad phasing of these investment outlays as depicted in the Plan is shown in Table below :

TABLE IV

Phasing of Total Investment in Tea, Rubber and Coconuts 1959–68

(Rs. million)

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Total*
1. Replanting and Rehabilitation	54	61	70	72	77	80	83	86	88	91	762
2. New land	12	11	10	10	9	8	7	7	6	5	85
3. Buildings machinery, &c.	27	27	29	29	30	31	31	33	34	34	304
Total	93	99	109	111	116	119	121	126	128	130	1,151

As the categories above indicate, there are three aspects to the investment programme in this field covering replanting and rehabilitation, the extension of acreages, and investment in buildings and machinery. It is convenient to summarise each of these categories in turn.

(A) REPLANTING AND REHABILITATION

The total costs of the Replanting and Rehabilitation Programmes for all three crops over the 10 years 1959-1968 is shown below :

TABLE V

Cost of the Replanting Programme (1959–68)

(Rs. million)

	Government Outlay	*Private Outlay*	*Total*
Tea (estates)	116	81	197
Rubber—			
Estates	114	107	221
Small-holdings	80	2	78
Total	194	105	299
Coconut	41	189	230

TABVE VI

Cost of the Rehabilitation Programmes (1959–68)

(Rs. million)

	Government Outlay	Private Outlay	Total
Tea			
Small-holders	35	—	35
Coconut			
Fertiliser Scheme*			
Under assumption (A)	66	161	227
Under assumption (B)	85	207	292

* Assumptions (A) and (B) as described in note to Table II.

As indicated above, the total cost of the replanting programme for the tea industry is estimated at Rs. 197 million over the ten-year period. The Government subsidy amounts to 59 per cent of this amount. The total cost of the Rubber Programme is nearly Rs. 300 million, 65 per cent of which would be provided by the Government subsidy. In the case of Tea and Rubber the total cost of replanting includes the outlays needed for the preparation and maintenance of the replanting areas till they come into bearing. The subsidies are intended to meet part of the cost of all these operations. In the case of the Coconut industry the total cost of the replanting scheme over the 10-year period amounts to Rs. 230 million. This excludes the cost of the capital equipment which is of a general nature and cannot be imputed to replanting alone. It also excludes the cost of manuring which is separately estimated in the rehabilitation programme. The Government assistance to this scheme takes the form of issuing seedlings, barbed wire and fence posts at a subsidized rate. The Government subsidy on these items over the 10-year period amounts to Rs. 41 million which is 18 per cent of the cost of replanting.

The relative magnitude of Government assistance for the replanting of coconuts is admittedly small in comparison to the assistance for tea and rubber. However, it should be remembered that it is intended to finance the entire cost of the tea industry programme by a cess on tea exports. The receipts that would otherwise accrue to tea producers is reduced on that account. In fact the Tea Subsidy Fund promises to be in surplus over the ten-year period. The subsidy for the coconut industry on the other hand would be financed out of general revenue. The entire cost of the subsidy would therefore represent a net gain to the industry as a whole. From this point of view the coconut industry is more favoured than the tea industry. The share of the Government subsidy in the total cost of replanting is the highest for rubber. Although in the past this subsidy was financed out of the premium prices received through the agreement with China, a different method is now in force. The producers' price is now governed by the world market price and the major portion of the replanting subsidy will be met (until 1962) through an aid agreement with China (it is intended to meet the residue out of general revenue). The whole of the subsidy for replanting constitutes, therefore, a net gain to the rubber industry. All this assumes, of course, that there would be no offsetting changes in the rates of export duties and that these duties would be determined independently by other factors.

(B) THE EXTENSION OF ACREAGES

In addition to the replanting and rehabilitation schemes described above it is expected that there would be some investment on the cultivation of new land with tea, rubber and coconut over the ten-year period. In view of the very limited availability of new land in the Wet Zone, the extents to be cultivated in this way would be moderate. However, there has in recent years been a gradual extension in acreages particularly under tea and coconut. Some provision should, therefore, be made for a possible continuance of this trend on a limited scale. There is, in fact, a scheme already in operation under Government auspices for the cultivation of new land in plantation crops. The table below shows estimated investments on new land for each of the three crops over the ten-year period:

TABLE VII

Investment in New Land (1959–68)

(Rs. million)

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	*Total Investment*
Tea	7	6	5	5	4	4	3	3	2	1	40
Rubber*	—	—	—	—	—	—	—	—	—	—	—
Coconut	5	5	5	5	5	4	4	4	4	4	45
Total ..	12	11	10	10	9	8	7	7	6	5	85

* Negligible.

In the case of tea, the scope for the opening of new land would diminish progressively as suitable land areas get exhausted. An investment, estimated at Rs. 8 million, was, in fact, made for the opening of new land in tea in 1957. It is expected that this figure would diminish progressively over the ten-year period. The subsidised replanting scheme should itself lead to a shift in emphasis from new land to replanting.

It is not expected that new planting in rubber would be significant over the ten-year period. Indeed the extent of new planting in the recent past has been extremely small particularly since the inauguration of the replanting scheme.

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The scope for expanding the acreage under coconut is greater than for tea and rubber. The coconut palm is less demanding in respect of climate and physical requirements. It has been estimated at an annual rate of about 3,000 acres. Provision has accordingly been made for the extension of cultivation to a further 30,000 acres over the ten-year period.

(c) INVESTMENT IN BUILDING AND MACHINERY

In the background of the anticipated increase in output for each of the plantation crops it is necessary to make provision for supplementary investments in buildings and machinery. The provision made in the Plan under this head are shown below :

TABLE VIII

Investment in Buildings and Machinery* (1959–68)

(Rs. million)

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	*Total*
Tea	17	17	18	18	18	19	19	20	20	21	187
Rubber	6	6	7	7	8	8	8	9	9	9	77
Coconut	4	4	4	4	4	4	4	4	4	4	40
Total	27	27	29	29	30	31	31	33	33	34	304

* Excludes housing and quarters for labour.

The estimated investment in buildings and machinery in 1957 in the Tea Industry amounted to Rs. 17 million. It is envisaged that the annual investment under this head would rise consistently over the ten-year period and reach a level of Rs. 21 million by 1968. The total for the ten-year period as a whole would amount to Rs. 187 million. It is important to note that housing and quarters for labour are excluded from the category of buildings. These form part of the total provision for housing in the Plan shown elsewhere in this Report.

In the case of rubber, the total investment for buildings and machinery over the ten years is estimated at Rs. 77 million. The annual investment would rise progressively from Rs. 6 million in 1959 to approximately Rs. 9 million by 1968. It should be remembered that in rubber the increase in output over the plan period is expected to be relatively large on account of the early commencement of the replanting scheme.

The provision made for investment in buildings and machinery for the coconut industry is relatively moderate—Rs. 40 million from 1959 to 1968. There are two factors that are of relevance to this provision. On the one hand, a measure of surplus processing capacity is already in existence which could absorb a portion of the increased output. On the other hand, a considerable proportion of the additional output would be needed for domestic consumption largely in the form of fresh nuts. The provision in the Plan has been made in the light of these factors.

III. CHANGES IN OUTPUT OVER THE TEN-YEAR PERIOD

Estimates have been made of the increase in output that would result from the programmes themselves and from certain other factors. Since the calculations are at constant prices they should be taken as indicating possible physical capacities.

There are several factors of relevance to future output—it was necessary to take account of as many of these as possible in the calculations. For instance, the process of replanting would lead to an increase in output in the areas affected. In estimating this increase, however, allowances had to be made for such factors as the interval of time that would elapse before the areas are in full bearing and the lower output that would accrue in the earlier years. Again, an allowance was necessary for the loss in output through the uprooting of old trees before replanting and through the diversion of land to other crops. Moreover, it could not be assumed that output would remain unchanged in the areas not affected by replanting. In the tea industry the rise in output that has been realized in recent years was due not to replanting but to the increased application of fertilisers. An assessment had to be made of the scope for a continuation of this process over the ten years and for the additional output that may be expected from this source. With rubber and coconuts, on the other hand, there is the likelihood of a fall in the productivity of areas not replanted, on account of the ageing of trees. A reasonable allowance had to be made for this factor.

All these and a number of other considerations involved elaborate and extensive calculations. The details of the allowance made and the several assumptions on which they were based are provided along with the tables at the end of the chapter.

The estimates of output indicate that by 1968 tea production would increase by 26 per cent. rubber production by 36 per cent. and coconut production by 32 to 40 per cent. over that in 1957. This is shown in the tables below :

TABLE IX

Output of Export Crops (1957 and 1968)

	1957	1968	*Increase*	*Percentage Increase*
Tea				
Million lb.	398	503	105	26
Rubber				
Million lb.	220	299	79	36
Coconut				
(A) Million nuts	2,090	2,753	663	32
(B) Million nuts	2,090	2,963	873	42

The relatively better results expected from rubber when compared to tea are due largely to the earlier start in replanting which the rubber industry has enjoyed and also to the faster rate of this process. In the case of tea, only a fraction of the areas replanted will be yielding results by 1968. In fact the major portion of the estimated increase in the tea output is not due to the replanting or rehabilitation programmes. The estimates of coconut output should be interpreted with caution. Production in 1957, as shown subsequently, was low. If the output in 1968 is compared with the average of the years 1953 to 1957, the result proves disappointing. This is due to several factors—the expected results from replanting and rehabilitation are not spectacular on account of technical reasons (e.g., new high-yielding varieties have not been evolved as with tea and rubber, the rates of replanting and rehabilitation envisaged are limited) and there are offsetting losses in output on account of senility.

TABLE X

Analysis of increase in Output (1957–1968)

Crop	*Increase*	*Due to replanting programme*	*Due to rehabilitation programme*	*Due to other factors*	*Offsetting losses*
Tea					
Million lb.	105	38	7	98*a*	38*b*
Rubber					
Million lb.	79	181	—	—	102*c*
Coconuts					
(A) Million nuts	663	408	266	284*d*	295*e*
(B) Million nuts	873	408	476	284*d*	295*e*

a Made up of gains due to fertiliser and from new acres.

b Made up of losses due to acreage reduction and uprooting.

c Made up of losses due to acreage reduction, uprooting and superannuation.

d Due to new lands coming into production and reversion of coconut lands to normal yields from the low yields in 1957.

e Made up of losses due to uprooting and superannuation.

In tea, as shown in the table above, the major part of the estimated increase in output over the ten-year period is from a cause other than the replanting and rehabilitation programme. This is the continued and extended application of fertiliser to areas that have not been replanted. It is, of course, particularly difficult to assess in quantitative terms the role of this factor over the next ten years. Since an estimate of the future performance of the tea industry depends very heavily on it the limitation is serious. Over the past ten years Ceylon's tea output has increased at an average rate of 3.3 per cent. This was very largely due to the increased use of fertiliser by tea producers. The extent of replanting was negligible over the period.

Regarding future prospects, the Tea Research Institute has indicated to the Planning Secretariat that there is still considerable scope for further extending the use of fertiliser in the tea industry. The Institute was of the view that given fair prices total output may be expected to expand at an average annual rate of 5 per cent over the next five years.

This involves a 25 per cent increase in 5 years. For the purpose of the calculations presented here a smaller rate of increase of 2.5 per cent annually or 25 per cent over a ten-year period was postulated for the output of estate areas not subject to replanting. Even this estimate, though more conservative than the expectations of the Tea Research Institute may prove invalid. The use of fertiliser on tea estates is not directly sponsored by any existing Government programme. Apart from the technical scope for an extension of the process, the response of producers will depend on such factors as prices and expectations covering the future prospects of the industry.

The gains to output from the possible extension of cultivation in new lands would be small (13 million lb. by 1968). As mentioned earlier the scope for extending acreages is limited and should decline progressively.

The estimate of the increase in tea output has made allowance for the loss in output due to the diversion of some 20,000 acres of unsuitable small-holdings to other uses. This loss is only a little more than offset by the increased production from the remaining small-holdings after rehabilitation. The major cause of the loss in output would be uprooting of existing areas for replanting.

In the case of rubber the estimated increase in output is due entirely to replanting. The acreages replanted at the commencement of the scheme in 1953 come into bearing by 1959. Thereafter increased extents would come into bearing over the period of the Plan. By 1968 an estimated extent of 220,000 replanted acres would be in either full or partial bearing. As in the case of tea, there would be offsetting losses on account of both uprooting and the diversion of unsuitable lands to other crops. There is, in addition, a further factor for which some allowance has to be made. This is the probable decline in yields, on account of superannuation, of areas that would remain unreplanted over the period of the Plan. A decline in yields of 2 per cent per year has been provided for in making the estimates here.

In the case of coconuts, estimates of changes in output are related to the programmes for replanting and rehabilitation as well as to an assessment of additional acreages coming into bearing. The Plan aims at replanting 250,000 acres over the 10 years 1959-68. However, areas replanted prior to 1959 would come into bearing within this period. It is in fact estimated that a total of 201,000 acres would be in full or partial bearing by 1968. The gains to output from replanting alone between 1959 and 1968 are estimated at 408 million nuts. A further contribution to output in coconuts would accrue through the rehabilitation programme based on the subsidized distribution of fertilisers. Two estimates of the gains to output from this source have been made. The first, described as Scheme A, is based on the programme presently envisaged by the Ministry of Agriculture. It aims at stepping up the use of fertilisers on coconut lands to 50,000 tons by 1961 and at maintaining this level of use over the years beyond. On the basis of estimates of average requirements of fertilisers per acre this scheme should suffice to provide the fertiliser requirements of 400,000 acres of coconut lands. The second estimate, Scheme B, is based on the possibility of a further expansion in the use of fertilisers. It assumes that the use of fertilisers would increase progressively beyond the target of 50,000 tons set for 1961 so as to reach a total of 85,000 tons by 1968. At the same rate of average fertiliser requirement per acre, this implies the use of fertilisers over 680,000 acres of coconut lands by 1968.

In view of the urgent need for additional export earnings and the potential increase in local consumption (estimated to rise by 381 million nuts between 1959 and 1968 on account of population growth) it is important to aim at the higher of the two targets. There remains considerable scope for extending the use of fertilisers to coconut lands. It should be remembered that under Scheme A only 400,000 acres or 35.4 per cent of the total 1968 coconut acerage of 1,130 million acres would be using fertilisers. Scheme B essentially aims at increasing this proportion to 60.2 per cent. The difference in output by 1968, implied by the two schemes, is equivalent to 210 million nuts. The difference made to exports, after allowance is made for local consumption, would be as much as 210 million nuts.

The estimates of output in 1968 made above have also assumed that the yields on coconut lands would have reverted to normal levels from the low production in 1957. Due to a series of severe droughts the productivity of coconut lands was badly affected and total output that year has been estimated at 2,090 million nuts. The average annual output over the years 1953-1957 was 2,291 million nuts. This latter figure has been assumed to represent the normal level of output of coconut lands.

In addition to benefits from the replanting and rehabilitation schemes described above, there would be a further contribution to output in coconuts, estimated at an additional 82.5 million nuts by 1968 from 30,000 acres of new land in bearing. The gains to output in coconut would, however, be offset by two factors—uprooting and superannuation. The total losses on this score, as indicated in the preceding table, is estimated at 295 million nuts by 1968.

IV. EXPORTS

The preceding section indicated the expected change in total output between 1957 and 1968. Estimates have also been made of the probable increase in exports after allowing for additional local consumption and changes in stocks. These are summarised in the table below:

TABLE XI

Estimates of Surplus for Exports (1957 and 1968)

	1957			*1968*		
	Output	*Local consumption and change in stocks*	*Exports*	*Output*	*Local consumption and change in stocks*	*Exports*
Tea (M. lb.)	398	30	368	503	40	463
Rubber (M. lb.)	220	10	210	299	8	291
Coconuts (M. nuts)	2,090	1,128	962	2,963	1,642	1,321

The position of end year stocks has been estimated only for tea and rubber. No information of the stock position of coconuts is available.

The estimates of local consumption in 1968 have taken account of the changes in population and certain other factors influencing consumption. In tea, a slight increase in per capita consumption has been allowed for. In coconuts per capita consumption has been held constant. In rubber, in addition to a rising trend of crude rubber for local industrial establishments, the estimated rubber requirements of a tyre and tube factory have also been included.

Estimates of value at 1957 prices of total output, exports and local consumption have also been made. These are shown in the table below. Exports have been valued at average (1957) f.o.b. prices. Local consumption and changes in stocks have been valued at average 1957 market prices.

TABLE XII

Value of Exports (1957 and 1968)

	Value in 1957 of			*Value in 1968 of*			*Increase in 1968*		
	*Total output**	*Local consumption and changes in stocks*	*Exports*	*Total output**	*Local consumption and changes in stocks*	*Exports*	*Total output*	*Local consumption and changes in stocks*	*Exports*
Tea	1,075	54	1,021	1,360	74	1,286	285	20	265
Rubber	301	1	300	425	9	416	124	8	116
Coconut	326	167	159	446	230	216	120	63	15

*** Excludes the value of investment goods produced within the industry.**

The total addition to export values from the tea, rubber and coconut industries amounts to Rs. 438 million between 1957 and 1968. This represents an increase of 30 per cent. in export earnings over 1957.

V. EMPLOYMENT

An attempt was made to estimate the course of employment in tea, rubber and coconut production over the period of the Plan. Programmes for increasing output are likely to be of some consequence to the level of employment in these industries and an assessment of this was needed for purposes connected with the overall Plan.

Details of the estimates relating to employment are provided in the tables at the end of this chapter. The following table summarises the main results :—

TABLE XIII

Total Employment in Tea, Rubber and Coconut (1957 and 1968)

	1957	*1968*	*Increase*
Tea	539,000	677,500	138,500
Rubber	194,000	199,996	5,996
Coconut	82,000	95,608	13,608

The figures here relate to total employment in estates. In coconut, however, both estates and small-holders have been included. They include all categories of skills. Employment in processing activities outside the plantations, such as tea and rubber packing and coconut milling, and in transport are excluded. Account has been taken of these under other heads in the Plan.

As the table above shows, the largest contribution to additional employment would be made by the tea industry. The increase in employment in this field is closely related to the additional output that would emerge from the extended use of fertilisers, from the replanting and rehabilitation schemes, and, to a small extent, from the opening up of new land. The employment estimates have been made on the basis of certain assumptions described in the subsequent tables. These concern the relationship between changes in yields per acre and employment. Since the continued application of fertilisers is expected to be the chief source of additional yields over the ten-year period the increase in employment is mainly associated with this factor. No provision has been made for additional employment in small-holdings. The assumption here is that the rehabilitation of these areas would result in a reduction in under-employment rather than in additional employment.

The contribution of rubber to additional employment is small. On the one hand, for technical reasons the need for additional labour on account of increased yields is less than for tea. On the other hand, the factors tending to reduce labour requirements—particularly superannuation and the extent of replanted areas not in bearing—are of some importance. In addition, since the scope for extending cultivation to new lands is negligible, no significant contribution to employment can be expected from this source. As in tea, no credit has been taken for increased employment in small-holdings.

In the case of coconuts too, the prospects for additional employment are limited. Coconut production is less labour intensive than tea production. Although here too labour requirements would increase with additional yields, the increase is relatively small. The estimates above have been based on the expanded rehabilitation programme described as Scheme B in small-holdings.

The estimates of employment enable some assessment to be made of certain ancillary aspects of tea, rubber and coconut production. By relating changes in employment to changes in output, it is possible to estimate the course of changes in Gross Domestic Product per worker. In the case of tea and rubber the figures are confined to the estate worker. These are summarised in the Table below relating to the years 1957 and 1968.

TABLE XIV

Changes in Gross Domestic Product per Worker (1957 and 1968)

(Rupees)

	1557	*1968*	*% Increase*
Tea	1,929	1,948	1
Rubber	1,301	1,702	31
Coconut	4,171	4,885	17

It should be remembered that these figures are based on the relationship between changes in output—due to a variety of factors— and changes in employment. They do not therefore measure strictly the changes in labour productivity in areas in bearing alone. Nevertheless, the figures above underline the relatively labour intensive character of tea production as compared to rubber and coconut production.

APPENDIX I

STATISTICAL TABLES ON TEA EXPANSION PROGRAMME

BASIC DATA :

***Year 1957*—**

(*a*) Total Acreage : 570,573 (Source : Administration Report of the Tea Controller, 1957).

(*b*) Total Output : 398,000,000 lb. (Source : Administration Report of the Tea Controller, 1957).

(*c*) Total Value of Exports : Rs. 1,021,000,000
(*d*) Total Volume of Exports : 368,000,000 lb.
(Source : Ceylon Customs Returns—as quoted in Central Bank Annual Report, 1957)

Stocks and local consumption (b–d) 30,000,000 lb.
Stocks may have been affected by congestion in Port of Colombo.

(*e*) Average Price of Exports (value/volume) Rs. 2·78 per lb.

(*f*) Average market price : Rs. 1·86 per lb.

(*g*) Total receipts from Export Duty : Rs. 239,000,000.

(*h*) Average export duty per lb. : 65 cents $\frac{\text{(Total duty receipts)}}{\text{(export volume)}}$.

(*i*) Total wage employment (Estates) from tea : 521,500 (includes 2,087 tea makers) (Source : Occupation Distribution in 1953 Census).
Estimate for 1957 : 539,000 at rate of 1.1. persons per acre.

(*j*) Total acreage of small-holdings under 20 acres—80,000 (Source : Information provided by Tea Controller).

(*k*) Total acreage of Estates (residue) : 490,000 acres

(*l*) Overall average yield per acre : 697 lb. $\frac{\text{(total output)}}{\text{(total acreage)}}$

(*m*) Average yield per acre on small-holdings—250 lb. per acre (Source : Information provided by Tea Controller).

(*n*) Total output of small-holdings : 20,000,000 lb. (m × j)

(*o*) Total output of Estates : 378,000,000 lb. (b – n)

(*p*) Average yield per acre on Estates : 771 lb. per acre (o/k).

TABLE 1

Calculation of Investment outlays in Replanting Tea

(Total cost Rs. 4,000 per acre over six years)

Index : Ac. '000
Cost Rs. Million

	1959		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
	Ac.	*Cost*	*Ac.*	*Cost*	*Ac.*	*Cost*	*Ac.*	*Cost*	*Ac.*	*Cost*	*Ac.*	*Cost*	*Ac.*	*Cost*	*Ac.*	*Cost*	*Ac.*	*Cost*	*Ac.*	*Cost*
1st year uprooting (30 per cent of total cost Rs 1,200)	4	4·8	4	4·8	5	6·0	5	6·0	6	7·2	7	8·4	8	9·6	8·5	10·2	9	10·8	10	12·0
2nd-year preparation for replanting (10 per cent of total Rs. 400)			4	1·6	4	1·6	5	2·0	5	2·0	6	2·4	7	2·8	8	3·2	8·5	3·4	9	3·6
3rd-year replanting (30 per cent of total Rs. 1,200)					4	4·8	4	4·8	5	6·0	5	6·0	6	7·2	7	8·4	8	9·6	8·5	10·2
4th-year maintenance and manuring (10 per cent of total Rs. 400)							4	1·6	4	1·6	5	2·0	5	2·0	6	2·4	7	2·8	8	3·2
5th-year maintenance and manuring (10 per cent of total Rs. 400)									4	1·6	4	1·6	5	2·0	5	2·0	6	2·4	7	2·8
6th-year maintenance and manuring (10 per cent of total Rs. 400)											4	1·6	4	1·6	5	2·0	5	2·0	6	2·4
Total Outlay		4·8		6·4		12·4		14·4		18·4		22·0		25·2		28·2		31·0		34.2

Total outlay over 10 years = Rs. 197 million.

TABLE 2

Distribution of Investment Outlays—Government and Private

(Government subsidy Rs. 2,500 per acre, Private outlay Rs. 1,500 per acre)

Index : Ac. '000
Sub. Rs. Million

	1959		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
	Ac.	*Sub.*	*Ac.*	*Sub.*	*Ac.*	*Sub.*	*Ac.*	*Sub.*	*Ac.*	*Sub.*	*Ac.*	*Sub.*	*Ac.*	*Sub.*	*Ac.*	*Sub.*	*Ac.*	*Sub.*	*Ac.*	*Sub.*
Government Subsidy :																				
1st instalment Rs. 1,000 after uprooting and preparation (i.e., every 2nd year)			4	4·0	4	4·0	5	5·0	5	5·0	6	6·0	7	7·0	8	8·0	8·5	8·5	9	9·0
2nd instalment Rs. 750 after replanting is over (i.e., end of 3rd year)					4	3·0	4	3·0	5	3·8	5	3·8	6	4·5	7	5·3	8	6·0	8·5	6·4
3rd instalment Rs. 250 in 4th year for manuring and maintenance							4	1·0	4	1·0	5	1·3	5	1·3	6	1·5	7	1·8	8	2·0
4th instalment Rs. 250 in 5th year for maintenance and manuring									4	1·0	4	1·0	5	1·3	5	1·3	6	1·5	7	1·8
5th instalment Rs. 250 in 6th year for maintenance and manuring											4	1·0	4	1·0	5	1·3	5	1·3	6	1·5
Total Government				4·0		7·0		9·0		10·8		13·1		15·1		17·4		19·1		20·7
Private (Rs. Million)		4·8		2·4		5·4		5·4		7·6		8·9		10·1		10·8		11·9		13·5

Total Government outlay over 10 years : Rs. 115·9 million.
Total Private outlay over 10 years : Rs. 81·1 million.

TABLE 3

Tea Smallholders Rehabilitation Scheme—Government Share of Costs

Distribution of Cost to Government per acre

(*Rs.*)

	1st year	2nd year	3rd year	4th year	5th year
Supplying Vacancies	150	75	75		
Soil Conservation	50	50			
Fertiliser	50	50	50	50	50
Total	250	175	125	50	50

Source : Tea Controller's Memorandum.

Annually 6000 acres are rehabilitated.

Total Acreages Rehabilitated Annually and Cost to Government

A = Acres ('000)

C = Costs (Rs. M.)

	1959		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
	A	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*
1st year @ Rs. 250	6	1·5	6	1·5	6	1·5	6	1·5	6	1·5	6	1·5	6	1·5	6	1·5	6	1·5	6	1·5
2nd year @ Rs. 175			6	1·1	6	1·1	6	1·1	6	1·1	6	1·1	6	1·1	6	1·1	6	1·1	6	1·1
3rd year @ Rs. 125					6	·8	6	·8	6	·8	6	·8	6	·8	6	·8	6	·8	6	·8
4th year @ Rs. 50							6	·3	6	·3	6	·3	6	·3	6	·3	6	·3	6	·3
5th year @ Rs. 50									6	·3	6	·3	6	·3	6	·3	6	·3	6	·3
Total	6	1·5	12	2·6	18	3·4	24	3·7	30	4·0	30	4·0	30	4·0	30	4·0	30	4·0	30	4·0

Total (1959–1968)—Rs. 35·2 million

TABLE 4

Tea—Estimates of Output

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Total Acreage	570	570	570	570	570	570	570	570	570	570	570
Small-holders—											
20 acres and less	80	80	80	80	80	80	80	80	80	80	80
Estates (acres)	490	490	490	490	490	490	490	490	490	490	490
Estate Acreage Replanted	—	4	4	5	5	6	7	8	8·5	9	10
Estate Acreage not replanted ..	490	486	482	477	472	466	459	451	442·5	433·5	423·5
Output of Estate Acreage not replanted .. (Million lb.) at existing yields but loss on uprooted areas at 400 lb. per acre for 6 years and 600 for 4 years.	378	376	375	373	371	368	365	360	355	350	344
Average yield per acre without additional fertiliser (lb.)	771	774	778	782	786	790	795	798	801	806	811
Output of Estate Acreage not replanted assuming annual rate of increase in output of 2·5 per cent (i.e., 25 per cent. in 10 years)	378	385	394	401	408	414	420	423	426	429	430
Average yield per acre after fertiliser (lb.) ..	771	792	817	841	864	888	915	938	962	990	1,015
Expected output from acreage replanted—											
(*a*) Acreage in bearing (accumulated) ..	—	—	—	—	—	—	4	8	13	18	24
(*b*) Output at average yield of 1,600 lb. per acre	—	—	—	—	—	—	6·4	12·8	20·8	28·8	38·4
Total output from Estates	378	385	394	401	408	414	426	433	444	458	468
Small-holdings											
Acreage assuming 2,000 acres of unsuitable land annually diverted for other uses (acres)	80,000	78,000	76,000	74,000	72,000	70,000	68,000	66,800	64,000	62,000	60,000
Acreage rehabilitated annually (6,000 per year) (acres)	—	6,000	12,000	18,000	24,000	30,000	36,000	42,000	48,000	54,000	60,000
Acreage not rehabilitated (acres) ..	80,000	72,000	64,000	56,000	48,000	40,000	32,000	24,000	16,000	8,000	—

TABLE 4—(*contd.*)

Tea—Estimates of output—(contd.)

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Output per acre at 250 lb. per acre (million lb.)	20	18	16	14	12	10	8	6	4	2	—
Output from rehabilitated acres at 450 lb. per acre	—	—	—	2·7	5·4	8·1	10·8	13·5	16·2	18·9	21·6
Total output from small-holdings ..	20	18	16	16·7	17·4	18·1	18·8	19·5	20·2	20·9	21·6
Additional Output from new Areas coming into bearing											
New acreages coming into bearing (acres) ..	2,944	2,699	2,148	3,184	2,800	2,800	2,400	2,000	2,000	1,600	1,600
(*Note.*—This is based on new land opened up prior to 1958 and the estimate of new lands opened up within the plan period. It is assumed that an acre comes into bearing 4 years after planting.)											
Net additional area (new area less old area going out of production) (acres) ..	1,472	1,349	1,074	1,592	1,400	1,400	1,200	1,000	1,000	800	800
Additional output from net new land ('000 lb.) (Yield per acre is assumed to be 1,000 lb.) ..	1,472	1,349	1,074	1,592	1,400	1,400	1,200	1,000	1,000	800	800
Cumulated output ('000 lb.) ..	1,472	2,821	3,895	5,487	6,887	8,287	9,487	10,487	11,487	12,287	13,087

Acres = '000 } Unless otherwise stated.
Output = Million lb. }

TABLE 5

Stocks and Local Consumption

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Changes in stocks (million lb.)	1·76	1·86	2·00	2·16	2·30	2·44	2·70	2·86	3·08	3·38	3·60
Value of change in stocks at 1·86 per lb. (Rs. million)	3·27	3·46	3·72	4·01	4·27	4·54	5·02	5·32	5·73	6·29	6·70
Local consumption (million lb.)	24·6	25·3	26·0	27·7	28·4	29·2	31·1	31·9	33·9	34·7	36·9

TABLE 6

Tea—Net Output and Exports

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Output from existing acreages (million lb.)	398	403	410	418	425	432	445	453	464	479	490
Output from new lands (million lb.)	1·5	2·8	3·9	5·5	6·9	8·3	9·5	10·5	11·5	12·3	13·1
	399·5	405·8	413·9	423·5	431·9	440·3	454·5	463·5	475·5	491·3	503·1
Local consumption plus changes in stocks (million lb.)	26.36	27.16	28	29·86	30·7	31·64	33·80	34·76	36·98	38·08	40·5
Net export surplus (million lb.)	373·14	378·64	385·9	393·64	401·2	408·66	420·7	428·74	438·52	453·22	462·6
Value of exports at Rs. 2·78 per lb. (Rs. million)	1,037·3	1,052·6	1,072·8	1,094·3	1,115·3	1,136·1	1,169·5	1,191·9	1,219·1	1,259·9	1,286
Revenue from replanting cess at 4 ct. per lb. (Rs. million)	14·9	15·1	15·4	15·7	16·0	16·3	16·8	17·1	17·5	18·1	18·5
Government outlay in replanting	—	—	4·0	7·0	8·0	10·8	13·1	15·1	17·4	19·1	20·7

Cumulated Total Revenue for Replanting Fund: Rs. 166·5 million
Cumulated Total Government Outlay for Replanting: Rs. 115·9 million
Surplus Balance in Fund exclusive of interest at 10th year: Rs. 50·6 million.

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TABLE 7

Investment Programme for Tea

(*Rs. million*)

1. Investment in—	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
(*a*) Replanting and Rehabilitation	6	9	16	18	22	26	29	32	35	38
(*b*) Opening up new land	7	6	5	5	4	4	3	3	2	1
(*c*) Machinery and buildings	17	17	18	18	18	19	19	20	20	21
Sub-Total	30	32	39	41	44	49	51	55	57	60
(*d*) Value of the increase in stocks	3	4	4	4	5	5	5	6	6	7
Total	33	36	43	45	49	54	56	61	63	67

Total .. Rs. 507 million.

TABLE 8

Employment in Tea—(1) Replanting

Assumptions :

Constructional or Revolving Employment.—No net increase since existing labour force will be deployed from plucking and current operations to replanting.

Operational Employment.—Labour requirement on replanted areas in bearing increases from present average rate of 1.1 labour units per acre (for all estates) to an average of 1·9 units per acre due to higher yields (Source : Tea Controller's Memorandum on Tea Rehabilitation).

Note.—No correction is made for possibly lower rates of labour units per acre on areas which are replanted but not yet in full bearing.

Year	*1958*	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Total Acreage Replanted (cumulated)		4	8	13	18	24	31	39	47·5	56·5	66·5
Areas in bearing (cumulated)							4	8	13	18	24
Areas not in bearing (cumulated)		4	8	13	18	24	27	31	34·5	38·5	42·5
Labour requirements on areas not in bearing at 1·1 persons per acre (cumulated)		4,400	8,800	14,300	19,800	26,400	29,700	34,100	37,950	42,350	46,750
Labour requirements on areas in bearing at 1·9 persons per acre (cumulated)							7,600	15,200	24,700	34,200	45,600
Total labour force on areas replanted		4,400	8,800	14,300	19,800	26,400	37,300	49,300	62,650	76,550	92,350
Present labour force on 66,500 acres at 1·1 persons per acre :	73,150										
Increase :	19,200										

TABLE **8**—*(contd.)*

Employment in Tea—(2) due to Raising of Yields in Acreages not replanted

Assumptions :

Constructional and Revolving Employment.—Nil.

Operational Employment.—An average yield of 771 lb. per acre requires 1·1 persons per acre. An average yield of 1,600 lb. per acre requires 1·9 persons per acre (Source : Tea Controller's Memorandum). The ratio of the increase in yields to labour requirements is 829 lb. : ·8 persons per acre, or 1 lb. : ·000965 persons per acre.

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Average yield per acre after fertiliser (lb.)	771	792	817	841	864	888	915	938	962	990	1,015
Increase in yields (cumulated)		21	46	70	90	117	144	167	191	219	244
Additional labour required per acre (i.e., increase in yield × ·000965)		·0189	·04439	·6755	·08974	·11290	·13896	·16116	·18432	·21134	·23546
Total labour required per acre	1·1	1.1189	1·14439	1·16755	1·18974	1·21290	1·23896	1·26116	1·28432	1·31134	1·33546
Not replanted acreage	490	486	482	477	472	466	459	451	442·5	433·5	423·5
Total labour requirements	539,000	543,785	551,596	556,921	561,557	565,211	568,683	568,783	568,312	568,466	565,567

TABLE 8—*(contd.)*

Employment in Tea—(3) New Land

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Net new land coming into bearing (acres)	1,472	1,349	1,074	1,592	1,400	1,400	1,200	1,000	1,000	800	800
Labour requirements at 1·4 persons per acre	2,061	1,889	1,504	2,229	1,960	1,960	1,680	1,400	1,400	1,120	1,120
Cumulated	2,061	3,950	5,454	7,683	9,643	11,603	13,283	14,683	16,083	17,203	18,323
New acreage planted but not in bearing	1,400	1,400	1,200	1,000	1,000	800	800	600	600	400	200
Labour requirements on new acreage planted but not in bearing at 0·7 persons per acre	980	980	840	700	700	560	560	420	420	280	140
Total labour requirements on areas newly planted but not in bearing	980	1,960	2,800	3,500	3,220	2,800	2,520	2,240	1,960	1,680	1,260
Total requirements on new land	3,041	5,901	8,254	11,138	12,863	14,403	15,803	16,923	18,043	18,883	19,583

The yield on new land is assumed to be 1,000 lbs. per acre which on the same assumptions as made earlier implies a labour requirement of 1·4 persons per acre.

Employment in Tea—(4) Total

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Total labour requirements on areas replanted		4,400	8,800	14,300	19,800	26,400	27,300	49,300	62,650	76,550	92,350
Total labour requirements on areas not replanted	539,000	543,785	551,596	556,921	561,557	565,211	568,683	568,783	568,312	568,466	565,567
Total labour requirements on new lands	3,041	5,910	8,254	11,138	12,863	14,403	15,803	16,923	18,043	18,883	19,583
Total	542,041	554,095	568,650	582,359	594,220	606,014	621,786	653,006	649,005	663,849	677,509

APPENDIX II

STATISTICAL TABLES ON RUBBER EXPANSION PROGRAMME

BASIC DATA :

Year 1957—

(*a*) Total Acreage : 660,725 (Administration Report of Rubber Controller—1957).
Acreage in bearing : 550,433 (Source : Administration Report of Rubber Controller—1957).

	Acres
Area uprooted for replanting	108,905
Other areas left untapped	1,387
Total not in bearing	110,292

(*b*) Total Output : 219,887,360 lb. (or 98,164 tons at 2,240 lb. per ton) (Source : Administration Report of Rubber Controller—1957).

(*c*) Total Value of Exports : Rs. 300,298,815
(*d*) Total Volume of Exports : 210,472,640 lb. (or 93,961 tons)
{ Administration Report of Rubber Controller—1957. }

Change in Stocks and Local Consumption (b—d) : 9,414,720 lb. (or 4,203 tons) of which
Local Consumption : 725,760 lb. (or 324 tons)
Change in Stocks : 8,688,960 lb. (or 3,879 tons).

(*e*) Average Price of Exports $\frac{\text{(Value)}}{\text{(Volume)}}$: Rs. 1·43 per lb.

(*f*) Average Market Price : Rs. 1·16 per lb. (Central Bank Bulletin).

(*g*) Total Receipts from Export Duty : Rs. 60,078,728 (Customs Returns)

Note.—" A fixed export duty of 32 cents per lb. on all rubber other than scrap rubber and scrap crepe which was introduced with effect from midnight May 16/17, 1956, continued in operation till midnight August 26/27, 1957, when the fixed export duty was reduced to 28 cents a lb. on all grades of rubber " (ibid. pp. K. 10).

(*h*) Average Export Duty per lb. $\frac{\text{(Total duty receipts)}}{\text{(export volume)}}$ 28·5 cents.

Other Cesses : Replanting 5 cents per lb. on sheet rubber, latex, crepe and sole crepe
10 cents per lb. on scrap crepe (levied on all exports of rubber till midnight of August 26/27, 1957).

Under Rubber Control Act :	·23 cents per lb.
Under Rubber Research Ordinance :	·55 cents per lb.
Under Medical Wants Ordinance :	·75 cents per lb.
Total	1·53 cents per lb.

(*i*) Total Wage Employment (Estates) in Rubber : 189,169 (includes 1,340 rubber makers but excludes 814 rubber estate superintendents) (Source : Occupation Distribution in 1953 Census)

(*j*) Total Acreage of Small-holdings under 10 acres: 184,510 acres (of which area not in bearing due to uprooting for replanting and replanting: 27,413, acreage in bearing : 157,097).

(*k*) Total Acreage of Estates (residue) : 476,215 acres (of which area not in bearing due to uprooting for replanting and replanting = 81,492; acreage in bearing: 394,723).

(*l*) Overall average yield per acre : 333 lb. $\frac{\text{(total output)}}{\text{(total acreage)}}$.

Overall average yield per acre in bearing : 399 lb.

(*m*) Average yield per acre on small holdings (overall) : 225 lb. per acre : $\frac{\text{(output)}}{\text{(total acreage)}}$.

Average yield per acre in bearing : 264 lb. per acre

(*n*) Total Output on Small-holdings : 41,448,960 lb. (18,504 tons) (Source : Administration Report of Rubber Controller—1957), pp. K. 17.

(*o*) Total Output of Estates : 178,438,400 lb. (b—n).

(*p*) Average yield per acre on Estates (overall) : 375 lb. per acre.

Average yield per acre in bearing 452 lb. per acre.

(*Note.*—1,387 acres left untapped out of the total acreage of both Estates and Small-holdings have been left out of the estimates).

TABLE 1

Rubber Replanting

Calculation of total cost of Replanting Rubber on Estates (10 acres and above)

Note.—The total cost of Rs. 1,500 per acre is spent over 7 years in the following manner : Rs. 570 in the 1st year, Rs. 180 in the 2nd, and Rs. 150 annually from the 3rd to the 7th year. (*Source* : Rubber Controller).

	1958		*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
Expenditure	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*
1st Yr. at 570	16,006	9·1	14,000	8·0	14,000	8·0	14,000	8·0	14,000	8·0	14,000	8·0	14,000	8·0	14,000	8·0	14,000	8·0	14,000	8·0	14,000	8·0
2nd Yr. at 180	19,339	3·5	16,006	2·9	14,000	2·5	14,000	2·5	14,000	2·5	14,000	2·5	14,000	2·5	14,000	2·5	14,000	2·5	14,000	2·5	14,000	2·5
3rd Yr. at 150	18,741	2·8	19,339	2·9	16,006	2·4	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1
4th Yr. at 150	21,049	3·2	18,741	2·8	19,339	2·9	16,006	2·4	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1
5th Yr. at 150	14,042	2·3	21,049	3·2	18,741	2·8	19,339	2·9	16,006	2·4	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1
6th Yr. at 150	7,323	1·1	15,042	2·3	21,049	3·2	18,741	2·8	19,339	2·9	16,006	2·4	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1
7th Yr. at 150	—	—	7,323	1·1	15,042	2·3	21,049	3·2	18,741	2·8	19,339	2·9	16,006	2·4	14,000	2·1	14,000	2·1	14,000	2·1	14,000	2·1
Total *Estates*		22·0		23·2		24·1		23·9		22·8		22·1		21·3		21·0		21·0		21·0		21·0
																					Total	243·4

Calculation of total cost of Replanting Rubber on Small-holdings (10 acres and below)

Note.—The total cost of Rs. 1,000 per acre is spent over 7 years in the following manner : Rs. 380 in the 1st year, Rs. 120 in the 2nd year and Rs. 100 annually from the 3rd to the 7th year. (*Source* : Rubber Controller).

	1998		*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
1st Yr. at 380	7,736	2·9	8,000	3·0	8,000	3·0	8,000	3·0	8,000	3·0	8,000	3·0	8,000	3·0	8,000	3·0	8,000	3·0	8,000	3·0	8,000	3·0
2nd Yr. at 120	8,153	1·0	7,736	0·9	8,000	1·0	8,000	1·0	8,000	1·0	8,000	1·0	8,000	1·0	8,000	1·0	8,000	1·0	8,000	1·0	8,000	1·0
3rd Yr. at 100	7,847	0·8	8,153	0·8	7,736	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8
4th Yr. at 100	6,635	0·7	7,847	0·8	8,153	0·8	7,736	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8
5th Yr. at 100	3,990	0·4	6,635	0·7	7,847	0·8	8,153	0·8	7,736	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8
6th Yr. at 100	788	0·1	3,990	0·4	6,635	0·7	7,847	0·8	8,153	0·8	7,736	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8
7th Yr. at 100	—	—	788	0·1	3,990	0·4	6,635	0·7	7,847	0·8	8,153	0·8	7,736	0·8	8,000	0·8	8,000	0·8	8,000	0·8	8,000	0·8
Total Small-holdings		5·9		6·7		7·5		7·9		8·0		8·0		8·0		8·0		8·0		8·0		80
																					Total	84·0
Grand Total Estate and Small-holdings		27·9		29·9		31·6		31·8		30·8		30·1		29·3		29·0		29·0		29·0		29·0
																					Grand Total	327·4

C = Cost Rs. million.

TABLE 2

Calculation of Government Subsidy

(*Rs. million*)

Large estates 100 *acres and above*. (Replanting rate : 7,000 acres per year from 1959) (Source : Rubber Controller)

Note.—Total subsidy is Rs. 700 paid in 4 equal instalments. The 1st instalment of Rs. 175 per acre after the old rubber is uprooted, the 2nd when the new plants have been planted ; the 3rd and 4th at yearly intervals if the area is properly maintained. In general, the first two instalments are paid by the end of the 1st year, the 3rd instalment during the 2nd year and the 4th during the 3rd year.

	1958		*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1958*	
Instalment	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*	*Acres*	*C*
1st and 2nd	9,973	3·5	7,000	2·5	7,000	2·5	7,000	2·5	7,000	2·5	7,000	2·5	7,000	2·5	7,000	2·5	7,000	2·5	7,000	2·5	7,000	25
3rd	11,336	2·0	9,973	1·7	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2
4th	10,762	1·9	11,336	2·0	9,973	1·7	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2	7,000	1·2
Total		7·4		6·2		5·4		4·9		4·9		4·9		4·9		4·9		4·9		4·9		4·9
																			Total			58·2

Small estates 10–100 *acres* . (Replanting rate : 7,000 acres per year from 1959)

Note.—Total subsidy is Rs. 900, paid in 4 equal instalments of Rs. 225 each.

1st and 2nd	6,033	2·7	7,000	3·2	7,000	3·2	7,000	3·2	7,000	3·2	7,000	3·2	7,000	3·2	7,000	3·2	7,000	3·2	7,000	3·2	7,000	3·2
3rd	8,002	1·8	6,033	1·4	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6
4th	7,979	1·8	8,002	1·8	6,033	1·4	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6	7,000	1·6
Total		6·3		6·4		6·2		6·4		6·4		6·4		6·4		6·4		6·4		6·4		6·4
																				Total		70·1

Small-holdings 10 *acres and below*, (Replanting rate 8,000 acres per year from 1959)

Note.—Total subsidy is Rs. 1,000, paid in 5 equal instalments of Rs. 200 each.

1st and 2nd	7,736	3·1	8,000	3·2	8,000	3·2	8,000	3·2	8,000	3·2	8,000	3·2	8,000	3·2	8,000	3·2	8,000	3·2	8,000	3·2	8,000	3·2
3rd	8,153	1·6	7,736	1·3	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6
4th	7,846	1·6	8,153	1·6	7,736	1·5	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6
5th	6,634	1·3	7,846	1·6	8,153	1·6	7,736	1·5	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6	8,000	1·6
Total		7·6		7·9		7·9		7·9		8·0		8·0		8·0		8·0		8·0		8·0		8·0
																				Total		87·3
Total Government Subsidy		21·3		20·5		19·5		19·2		19·3		19·3		19·3		19·3		19·3		19·3		19·3
																				Grand Total		215·6

C = Cost Rs. million.

TABLE 3

Estimated Increase in Estate Output due to Replanting

Index : Ac — Acreage ('000)
Up — Output (in lb. Millions)

Assumption : Yield per acre in areas replanted increase progressively to maximum as follows :

7th year	400 lb.
8th year	540 lb.
9th year	680 lb.
10th year	820 lb.
11th year	960 lb.
12th year	1,100 lb.

(*Basis :* Information provided by Rubber Controller)

	1958		1959		1960		1961		1962		1963		1964		1965		1966		1967		1968	
	Ac	*Up*	*Ac*	*Up*	*Ac*	*Up*	*Ac*	*Up*	*Ac*	*Up*	*Ac*	*Up*	*Ac*	*Up*	*Ac*	*Up*	*Ac*	*Up*	*Ac*	*Up*	*Ac*	*Up*
7th year or 1st year in bearing 400 lb.			7	2·8	15	6·0	21	8·4	19	7·6	19	7·6	16	6·4	14	5·6	14	5·6	14	5·6	14	5·6
8th year or 2nd year in bearing 540 lb.					7	3·8	15	8·1	21	11·3	19	10·3	19	10·3	16	8·6	14	7·6	14	7·6	14	7·6
9th year 680 lb.							7	4·8	15	10·2	21	14·3	19	12·9	19	12·9	16	10·9	14	9·5	14	9·5
10th year 820 lb.									7	5·7	15	12·3	21	17·2	19	15·6	19	15·6	16	13·1	14	11·5
11th year 960 lb.											7	6·7	15	14·4	21	20·2	19	18·2	19	18·2	16	15·4
12th year 1,100 lb.													7	7·7	15	16·5	21	23·1	19	20·9	19	20·9
13th year 1,100 lb.															7	7·7	15	16·5	21	23·1	19	20·9
14th year 1,100 lb.																	7	7·7	15	16·5	21	23·1
15th year 1,100 lb.																			7	7·7	15	16·5
16th year 1,100 lb.																					7	7·7
Total			7	2·8	22	9·8	43	21·3	62	34·8	81	51·2	97	68·9	111	87·1	125	105·2	139	122·2	153	138·7

TABLE 4

Estimated Increase in Small holder Output due to Replanting

Assumption : Yield per acre in areas replanted increases progressively to maximum as follows :

7th year	300 lb.
8th year	400 lb.
9th year	500 lb.
10th year	600 lb.
11th year	700 lb.
12th year	800 lb.

Index : *a* — acres in ('000)
o — output in million lb.

(*Basis :* Information provided by Rubber Controller)

	1958	*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
		a	***o***	***a***	***o***	***a***	***o***	***a***	***o***	***a***	***o***	***a***	***o***	***a***	***o***	***a***	***o***	***a***	***o***	***a***	***o***
7th year		·8	·2	4·0	1·2	6·6	2·0	7·8	2·3	8·2	2·5	8·0	2·4	8·0	2·4	8·0	2·4	8·0	2·4	8·0	2·4
8th year				·8	·3	4·0	1·6	6·6	2·6	7·8	3·1	8·2	3·3	8·0	3·2	8·0	3.2	8·0	3·2	8·0	3·2
9th year						·8	·4	4·0	2·0	6·6	3·3	7·8	3·9	7·2	4·1	8·0	4·0	8·0	4·0	8·0	4·0
10th year								·8	·5	4·0	2·4	6·6	4·0	7·8	4·7	8·2	4·9	8·0	4·8	8·0	4·8
11th year										·8	·6	4·0	2·8	6·6	4·6	7·8	5·5	8·2	5·7	8·0	5·6
12th year												·8	·6	4·0	3·2	6·6	5·3	7·8	6·2	8·2	6·6
13th year														·8	·6	4·0	3·2	6·6	5·3	7·8	6·2
14th year																·8	·6	4·0	3·2	6·6	5·3
15th year																		·8	·6	4·0	3·2
16th year																				·8	·6
Total		·8	·2	4·8	1·5	11·4	4·0	19·2	7·4	27·4	11·9	35·4	17·0	43·4	22·8	51·4	25·1	59·4	35·4	67·4	41·9

TABLE 5

Rubber-Estimates of Output

Acres (*'000*)
Output Million lb.

I. ESTATES	*1958*	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Estate—Total acreage ('000) (476 less 4 diverted to cocoa in 1957)	472	472	472	472	472	472	472	472	472	472	472
Estate acreage diverted into other crops (cumulated) (total of 47,952 acres to cocoa of which 4,000 acres diverted every year from 1957)	4	8	12	16	20	24	28	32	36	40	44
Total estate acreage under rubber	468	464	460	456	452	448	444	440	436	432	428
Estate acreage to be replanted	16	14	14	14	14	14	14	14	14	14	14
Cumulated	16	30	44	58	72	86	100	114	128	142	156
Estate acreage not replanted or previously replanted	452	438	424	410	396	382	368	354	340	324	312
Estate acreage previously replanted but coming into bearing (totai acreage previously replanted since commencement of programme in 1953; 81,000 acres)											
(*Source* : Reports of Rubber Replanting Scheme 1953–1956)		7	15	21	19	19					
Cumulated		7	22	43	62	81					
Estates-acreage previously replanted but not in bearing	81	74	59	38	19	—					
Estate-acreage not replanted and in bearing	371	357	343	329	315	301	287	273	259	243	231
1957 output from estate acreage in bearing : lb. million	178·4	178·4	178·4	178·4	178·4	178·4	178·4	178·4	178·4	178·4	178·4
Loss on output due to diversion of acreage to cocoa. Assumption average yield per acre at 200 lbs.	·8	1·6	2·4	3·2	4·0	4·8	5·6	6·4	7·2	8·0	8·8
Loss in output due to replanting. Assumption—present average yield per acre replanted at 250 lbs. up to 1962 and 275 lbs. thereafter	4·0	7·5	11·0	14·5	18·0	21·9	25·8	29·7	33·6	37·5	41·4
Output from estate acreage not replanted and in bearing. Uncorrected for superannuation	173·6	169·3	165·0	160·7	156·4	151·7	147·0	142·3	137·6	132·9	128·2
Yield per acre uncorrected for superannuation	468	474	481	488	496	504	512	521	531	547	555

TABLE 5—(*contd.*)

Rubber—Estimates of Output—(*Contd.*)

I. ESTATES—(*contd.*)											*Acres ('000)* *Output Million lb.*
Correction for superannuation Basis : yields reduced by 2% per annum cumulatively i.e. 22% in 1968. (The average rate of depreciation is 3% approx. on the basis of 35 year productive life span but actual rate during the life span will be less (lb. per acre)	*1958*	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
	459	455	452	449	446	444	440	438	435	438	433
Estimated total output from estate acreage not replanted (lb. million)	170·3	162·4	155	147·8	140·5	133·6	126·3	119·6	112·7	106·4	100·0
Estimated output due to replanting											
Replanted acreages in bearing ('000)		7	22	43	62	81	97	111	125	139	153
Total output from replanted acreage lb. million		2·8	9·8	21·3	34·8	51·2	68·9	87·1	105·2	122·2	138·7
Total output from all estate areas lbs. million	170·3	165·2	164·8	169·1	175·3	184·8	195·2	206·7	217·9	228·6	238·7
Increase in 11th year—68·4 lb. (million)											
II. SMALL HOLDINGS											
Acreage in 1958											
1957 : 189,510 or 190											
1958 : 189 (less 1,000 diverted to cocoa in 1957)	189	189	189	189	189	189	189	189	189	189	189
Acreages diverted to cocoa at rate of 1,000 acres (cumulated) per year	1	2	3	4	5	6	7	8	9	10	11
Total small holder acreage under rubber in ('000)	188	187	186	185	184	183	182	181	180	179	178
Small-holder acreage to be replanted ('000)	8	8	8	8	8	8	8	8	8	8	8
Small-holder acreage to be replanted (cumulated)	8	16	24	32	40	48	56	64	72	80	88

TABLE 5—(*contd.*)

Rubber Estimates of Output—(*Contd.*)

II. SMALL HOLDINGS—(*contd.*)	*1958*	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Small-holder acreage not replanted or previously replanted	180	171	162	153	144	135	126	117	108	99	90
Small-holder acreage previously replanted but coming into bearing (total acreage previously replanted since 1953 : 27,413)	—	·8	4·0	6·6	7·8	8·2					
Do. do. do. cumulated	—	·8	4·8	11·4	19·2	27·4					
Small-holder acreage not replanted and in bearing	152·6	143·6	134·6	125·6	116·6	107·6	98·6	89·6	80·6	71·6	62·6
1957 output from small-holdings in bearing (lb. million)	41·4	41·4	41·4	41·4	41·4	41·4	41·4	41·4	41·4	41·4	41·4
Loss in output due to diversion of acreage to cocoa. Assumption : Average yield per acre 125 lb. per acre	·1	·3	·4	·5	·6	·8	·9	1·	1·1	1·3	1·4
Loss in output due to replanting—assumption : present average yield per acre replanted at 175 lbs. up to 1962, and 200 lb. thereafter (lb. million)	1·4	2·8	4·2	5·6	7·0	8·6	10·2	11·8	13·4	15·0	16·6
Output from small-holdings not replanted in bearing uncorrected for superannuation	39·9	38·3	36·8	35·3	33·8	32·0	30·3	28·6	26·9	25·1	23·4
Yield per acre uncorrected for superannuation (lb.)	261	267	273	281	290	297	307	319	334	351	373
Yield per acre corrected for superannuation (basis as for estates) (lb.)	256	256	257	259	261	261	264	268	274	281	291
Estimated total output from small-holdings not replanted	39·1	36·8	34·6	32·5	30·4	28·1	25·0	24·0	22·1	20·1	18·2
Estimated output due to replanting											
Replanted acres in bearing acres ('000)	—	·8	4·8	11·4	19·2	27·4	35·4	43·4	51·4	59·4	67·4
Total output from replanted acreage (lb. million)	—	·2	1·5	4·0	7·4	11·9	17·0	22·8	25·1	35·4	41·9
Total output from all small-holdings (lb. million)	39·1	37·0	36·1	36·5	37·8	40·0	43·0	46·8	47·2	55·5	60·1

Increase in 10th year : 21·0 million lb.

TABLE 6

Total Output of All Rubber

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Total output of estates (lb. million)	170·3	165·2	164·8	169·1	175·3	184·8	195·2	206·7	217·9	228·6	238·7
Total output of small-holdings (lb. million)	39·1	37·0	36·1	36·5	37·8	40·0	43·0	46·8	47·2	55·5	60·1
GRAND TOTAL	209·4	202·2	200·9	205·6	213·1	224·8	238·2	253·5	265·1	284·1	298·8
Total increase 1958–1968 : 89·4 million lb.											

TABLE 7

Stocks and Local Consumption

Local consumption : (725,760 lb. in 1957)	*1958*	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Local consumption rises annually by 15% which was the annual rate of increase between 1949 and 1957. No correction is made for possible major rubber using industries in the future, e.g. manufacture of tyres and tubes. Foreign exchange losses would in this case be compensated by export of manufactures or import saving (lb. million)	·8	·9	1·1	1·2	1·3	1·4	1·5	1·6	1·7	1·8	1·9
Requirements of Tyre Factory (120,000 tyres at 550 tons for 70,000 tyres = 875 tons or 1·9 million lb. from 1961)	—	—	1·9	1·9	1·9	1·9	1·9	1·9	1·9	1·9	1·9
Total local consumption (lb. million)	·8	·9	1·1	3·1	3·2	3·3	3·4	3·5	3·6	3·7	3·8
Stocks : (stocks 1957 (December) 79·9 million lb. or 8·7 million lb. over December, 1956)	62·8	60·7	60·3	61·7	63·9	67·4	71·5	76·1	79·5	85·2	89·6
5 year average (1953–1957) of stocks at end of year to total annual production is 30%. This has been applied to total annual production. Change in stocks (million lb.)	−17·1	−2·1	− ·4	1·4	2·2	3·5	4·1	4·6	3·4	5·7	4·4
Total local consumption + stocks (million lb.)	63·6	61·6	61·4	64·8	67·1	70·7	74·9	79·6	83·1	88·9	93·4

TABLE 8

Net Output and Exports

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*total*
Total output (million lb.)	209·4	202·2	200·9	205·6	213·1	224·8	238·2	253·5	265·1	284·1	298·8
Local consumption (million lb.)	·8	·9	1·1	3·1	3·2	3·3	3·4	3·5	3·6	3·7	3·8
Change in stocks (million lb).	—17·1	—2·1	— ·4	1·4	2·2	3·5	4·1	4·6	3·4	5·7	4·4
Net export surplus (million lb.)	225·7	203·4	200·2	201·1	207·7	218·0	230·7	245·4	258·1	274·7	290·6
Value of exports at 1957 average price of Re. 1·43 for all rubber (Rs. million)	322·8	290·9	286·3	287·6	297·0	311·7	329·9	350·9	369·1	392·8	415·6

TABLE 9

Total Investment in Rubber

(*Rs. million*)

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*total*
Investment on—											
(*a*) Replanting	30	32	32	31	30	29	29	29	29	29	300
(*b*) New land, machinery and buildings	6	6	7	7	8	8	8	9	9	9	77
Sub-Total	36	38	39	38	38	37	37	38	38	38	377
Value of changes in stocks	−2	—	2	3	4	5	5	4	7	5	33
TOTAL	34	38	41	41	42	42	42	42	45	43	410

TABLE 10

Employment on Rubber Estates

Basis of Calculation:

1953 Workforce : 187,289 (Excluding rubber makers and Superintendents

1953 Acreage : 481,382—(Acreage not in bearing was negligible as replanting programme only commenced in 1953)

1953 persons per acre : ·39 (acres per person : 2·6)

Total estate output in 1953 was 178·1 million lb. giving an average yield per acre of 370 lb. labour requirements in 1953 for 1 lb. = ·00105405 persons per acre.

The relationship between changes in yields and labour requirement : Basis—Rubber Controller's estimate that increase in average yield per acre to 1,100 lbs. from 1953 average yields, involves an additional labour requirement of ·25 persons per acre. Thus, the total labour requirement per acre increases from ·39 persons to ·64 persons for an increase of yields of 730 lb. or by ·0003425 persons per acre per lb.

(1) Labour Requirement on Areas not replanted and in Bearing

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Total acreage ('000)	371	357	343	329	315	301	287	273	259	243	231
Yield per acre (lbs.)	459	455	452	449	446	444	440	438	435	438	433
Increase in yield over 1953	89	85	82	79	76	74	70	68	65	68	63
Increase in labour requirement per acre	·0305	·0291	·0281	·0271	·0260	·0253	·0240	·0233	·0223	·0233	·0216
Total labour requirement per acre	·4205	·4191	·4181	·4171	·4160	·4153	·4140	·4133	·4123	·4133	·4116
Total labour force on areas not replanted	156,005	149,619	143,408	137,226	131,040	125,005	118,818	112,831	106,786	100,432	95,080

(2) Labour Requirement on Replanted Areas not in Bearing

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Total acreage under rubber	468	464	460	456	452	448	444	440	436	432	428
Total acreage not replanted	371	357	343	329	315	301	287	273	259	243	231
Total replanted acreage	97	107	117	127	137	147	157	167	177	189	197
Total replanted acreage in bearing	—	7	22	43	62	81	97	111	125	139	153
Total replanted acreage not in bearing	97	100	95	84	75	66	60	56	52	50	44
Labour force on acreage not replanted not in bearing at ·39 persons per acre	37,830	39,000	37,050	32,760	29,250	25,740	23,400	21,840	20,280	19,500	17,160

TABLE 11—(*Contd.*)

(3) Labour Requirements on Replanted Areas in Bearing

Incremental Labour requirement per lb. Increase—·0003425 *persons per acre*

Yield per acre	*Increase over 1953 yield of 370 lb.*	*Increase labour per acre*	*Total labour requirement per acre*
400	30	·010274	·400274
540	170	·058219	·448219
680	310	·106164	·496164
810	450	·154110	·544110
960	590	·202055	·592055
1,100	730	·250000	·640000

A = *Acreage in* ('000) *L* = *Labour*

Acreage in bearing	*Labour requirements*	*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
	per acre	*A*	*L*	*A*	*L*	*A*	*L*	*A*	*L*	*A*	*L*	*A*	*L*	*A*	*L*	*A*	*L*	*A*	*L*		
At 400 lb.	·400274	7	2,802	15	6,004	21	8,406	19	7 605	19	7,605	16	6,404	14	5,604	14	5,604	14	5,604	14	5,604
At 540 lb.	·448219			7	3,138	15	6,723	21	9,413	19	8,516	19	8,516	16	7,172	14	6,275	14	6,275	14	6,275
At 680 lb.	·496164					7	3,473	15	7,442	21	10,419	19	9,427	19	9,427	16	7,939	14	6,946	14	6,946
At 820 lb.	·544110							7	3,809	15	8,162	21	11,426	19	10,338	19	10,338	16	8,706	14	7,618
At 960 lb.	·592055									7	4,144	15	8,881	21	12,433	19	11,249	19	11,249	16	9,473
At 1,100 lb.	·640000											7	4,480	22	14,080	43	27,520	62	39,680	81	51,840
Total		7	2,802	22	9,142	43	18,602	62	28,269	81	38,846	97	49,134	111	59,054	125	68,925	139	78,460	153	87,756

Total Labour Requirements on Estates

(other than for new land)

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Labour force on areas not replanted	156,005	149,619	143,408	137,226	131,040	125,005	118,818	112,831	106,786	100,432	95,080
Labour force on replanted areas not in bearing	37,830	39,000	37,050	32,760	29,250	25,740	23,400	21,840	20,280	19,500	17,160
Labour force on replanted areas in bearing	—	2,802	9,142	18,602	28,269	38,846	49,134	59,054	68,925	78,460	87,756
Grand Total	193,835	191,421	189,600	188,588	188,559	189,591	91,352	193,725	195,991	198,392	199,996

APPENDIX III

STATISTICAL TABLES ON COCONUT EXPANSION PROGRAMME

BASIC DATA—

Year 1957 (where available) :

(*a*) Total acreage : 1,070,942 acres in 1952 (Source : Census of Agriculture).
1,076,222 acres 1929 census and 1,070,942 in 1946 census.

Acreage in bearing : No statistics available.

(*b*) Total output : 2,090,000,000 nuts in 1957 and 2,520,000,000 in 1956. Average production 1956–57 : 2,305,000,000 (Source : Central Bank Annual Report for 1957, (p. 36) (Output fluctuates according to weather).

(*c*) Total value of coconut exports (Rs. million) 1957 :

Coconut oil	68·0	Coir and coir products	33·8
Desiccated coconut	54·8	Fresh coconuts	3·1
Copra	33·3	TOTAL : *Rs. 193·0 million*	
		TOTAL excluding Coir and coir products	159·2

(*d*) Total volume of exports 1957 :

Coconut oil	54,073 tons	Coir and coir products	72,129 tons
Desiccated coconut	48,899 tons	Fresh coconuts	7,776 tons or 11·5 million nuts.
Copra	34,767 tons		

Value of Exports in terms of nuts :

Conversion factors : 1 ton coconut oil = 8,125 nuts
1 ton copra = 5,000 nuts
1 ton D. C. = 6,900 nuts

Coconut oil	439·3 million nuts
Desiccated coconut	337·4 million nuts
Copra	173·8 million nuts
Fresh nuts	11·5 million nuts
Total	962·0 million nuts

Local consumption : (*b*—*d*) 1,128 million nuts.

Note.—Total output is statistically estimated by adding export volumes to local consumption—itself the product of per capita consumption (according to family budget surveys) and population.

Annual per capita consumption estimates :	Rutherford (1919)	130-145 nuts
	Family budget survey (1950)	125 nuts
	Consumer Finance Survey	115 nuts, consumer use plus 5·5 nuts industrial use = 121 nuts.

Per capita local consumption 1957 works out at 123 nuts. This presumably includes industrial uses. It also assumes no changes in stocks.

(*e*) Average price of Exports : General price average derived from total export value in terms of nuts divided by total export volume :

$$\frac{\text{Rs. } 159{\cdot}2}{962} \text{ million} = \text{cents } 16{\cdot}5 \text{ per nut}$$

Coconut oil (total value) Rs. 1,257 per ton : nut equivalent—cents 15·5 per nut
Desiccated coconut (total value) Rs. 1,121 per ton : nut equivalent—cents 16·2 per nut
Copra Rs. 958 per ton : nut equivalent—cents 19·0 per nut
Fresh nuts—cents 27·0 per nut : nut equivalent—cents 27·0 per nut
Coir and products Rs. 469 per ton

Value of local consumption in 1957 : Rs. 167 million
Total Local Consumption : 1,128 million nuts

(*f*) Average market price :

Coconut oil	Rs. 1,032 per ton	Source : Chamber of Commerce Weekly price list as quoted in Central Bank Monthly Bulletin (July 1958).
Desiccated coconut	Rs. 986 per ton	
Copra	Rs. 732 per ton	

(*g*) Export Duties in 1957 : (Source—Customs Returns December 1957)

Rs.	
4,480,086	desiccated coconut
931,422	fresh coconut
7,053,126	coconut oil
6,341,430	copra
Total .. 18,806,064	

STATISTICAL TABLES ON COCONUT EXPANSION PROGRAMME—(Contd.)

(*h*) Overall average export duty—cents 1·95 per nut $\frac{\text{(Total duty receipts)}}{\text{(Export Volume)}}$

	Rs.
Coconut oil	130·44 per ton
Desiccated coconut	91·62 per ton
Copra	182·40 per ton
Fresh nuts	cents 8·1 per nut

(*i*) Total wage employment from coconuts : 41,250 " labourers " (excludes 154 superintendents) — Source : Occupational Census 1953.
Cultivator farmers : 32,958 do.

(*j*) Total acreage under Small-holdings (under 20 acres) : 729,458 acres including town and village gardens (150,000 acres)
(Small-holdings alone 579,458 acres) (Source : Census of Agriculture 1953)

(*k*) Total acreage of estates : 341,475 (comprising A and B Estates)

(*l*) Overall average yield per acre : 2,152 nuts $\frac{\text{(average output 56·8)}}{\text{(total acreage)}}$

(*m*) Average yield per acre on small-holdings—not available—1,600 nuts per acre (reasonable assumption)

(*n*) Total output on small-holdings—not available—(1,167 million nuts on above assumption)

(*o*) Total output on estates—not available.

(*p*) Average yield per acre on estates—not available.

TABLE 1

Calculation of the Cost of Replanting

Note.—Cost figures are supplied by C. R. I. The cost of the capital equipment required is omitted as those items are not required specifically for replanting. Almost all of them are required for general work on a coconut estate.

A : Acres (Thousands)

C : Cost (Rs. Millions)

		1958		*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
		A	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*	*A*	*C*
Cost of 1st year— At 277.50	..	20	5.6	25	6.9	25	6.9	25	6.9	25	6.9	25	6.9	25	6.9	25	6.9	25	6.9	25	6.9	25	6.9
Cost in 2nd year— At 134.00	..	17	2.3	20	2.6	25	3.3	25	3.3	25	3.3	25	3.3	25	3.3	25	3.3	25	3.3	25	3.3	25	3.3
Cost in 3rd year— At 197.50	..	16	3.2	17	3.3	20	3.9	25	4.9	25	4.9	25	4.9	25	4.9	25	4.9	25	4.9	25	4.9	25	4.9
Cost in 4th year— At 158.50	..	14	2.2	16	2.5	17	2.6	20	3.1	26	3.9	25	3.9	25	3.9	25	3.9	25	3.9	25	3.9	25	3.9
Cost in 5th year— At 219.50	..	11½	2.5	14	3.0	16	3.5	17	3.7	20	4.3	25	5.4	25	5.4	25	5.4	25	5.4	25	5.4	25	5.4
			15.8		18.3		20.2		21.9		23.3		24.4		24.4		24.4		24.4		24.4		24.4

Total Cost : Rs. 245.9

TABLE 2

Calculation of Total Cost of Manuring

Note.—At the rate of 5 lb per palm 448 trees would require 1 ton of fertiliser. The cost of opening and closing a half circle trench has been estimated by the C. R. I. at 31 cents per tree. The cost of 448 trees is Rs. 138.88. The cost of a ton fertiliser is Rs. 330. The total cost of purchasing and applying a ton of fertiliser is thus Rs. 468.88.

F : Fertiliser used (tons '000). C : Cost of purchase and application (Rs. million)

	1958		*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
Schemes	*F*	*C*	*F*	*C*	*F*	*C*	*F*	*C*	*F*	*C*	*F*	*C*	*F*	*C*	*F*	*C*	*F*	*C*	*F*	*C*	*F*	*C*
Scheme A ..	35	16.4	40	18.7	45	21.1	50	23.4	50	23.4	50	23.4	50	23.4	50	23.4	50	23.4	50	23.4	50	23.4
Scheme B ..	35	16.4	40	18.7	45	21.1	50	23.4	55	25.7	60	28.1	65	30.4	70	32.8	75	35.1	80	37.5	85	39.8

Note.—Small-holders have been treated as incurring the same costs as Estates.

Total cost Scheme A	243.4
Total cost Scheme B	309.0

TABLE 3

Calculation of Government Subsidy on Fertilisers

Note.—It is assumed that the quantity of fertiliser is divided equally between estates and small-holdings (Agr. Plan P. 117). The subsidy differs between these two categories, being ½ in the case of small-holdings and ⅓ for Estates. At Rs. 330 per ton, the Government subsidy would be Rs. 165 for small-holdings and Rs. 110 per ton in the case of estates.

F : Fertiliser used (tons '000)
S : Subsidy (Rs. millions)

	1958		*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
Small holdings—	*F*	*S*	*F*	*S*	*F*	*S*	*F*	*S*	*F*	*S*	*F*	*S*	*F*	*S*	*F*	*S*	*F*	*S*	*F*	*S*	*F*	*S*
At Rs. 165 per ton :																						
Scheme A ..	17½	2.9	20	3.3	22½	3.7	25	4.1	25	4.1	25	4.1	25	4.1	25	4.1	25	4.1	25	4.1	25	4.1
Scheme B ..	17½	2.9	20	3.3	22½	3.7	25	4.1	27½	4.5	30	4.9	32½	5.3	35	5.7	37½	6.1	40	6.6	42½	7.1
Estates at Rs. 110 :																						
Scheme A ..	17½	1.9	20	2.2	22½	2.4	25	2.7	25	2.7	25	2.7	25	2.7	25	2.7	25	2.7	25	2.7	25	2.7
Scheme B ..	17½	1.9	20	2.2	22½	2.4	25	2.7	27½	3.0	30	3.3	32½	3.5	35	3.8	37½	4.1	40	4.4	42½	4.6

Total cost under Scheme A : Rs. 70.8 millions
Total cost under Scheme B : Rs. 90.0 millions

TABLE 4

The Government Subsidy for Replanting

The Government supplies seedlings which cost about Re. 1 each to produce, at 35 cts. The subsidy is, therefore, 65 cts. This is the only subsidy given at present. At 60 palms to the acre, the subsidy per acre would be Rs. 21 (Agricultural Plan p. 119).

A—Acreage ('000) C—Cost ('000)

1958		*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
A.	*C.*	*A.*	*C.*	*A.*	*C.*	*A.*	*C.*	*A.*	*C.*	*A.*	*C.*	*A.*	*C.*	*A.*	*C.*	*A.*	*C.*	*A.*	*C.*	*A.*	*C.*
25	420	25	525	25	525	25	525	25	525	525	525	25	525	25	525	25	525	25	525	25	525

Total Cost—Rs. 5,670,000.

TABLE 5

Proposed Schemes for Subsidy on Fencing Material

Two schemes have been proposed. The one to supply fence posts at a subsidised rate and the other to provide barbed wire at a subsidised price. To replant 25,000 acres a year it is estimated that 1·4 million fence posts and 40,000 tons of barbed wire are required annually. It is suggested that small-holding should receive a subsidy of Rs. 1.30 per fence post and Estates Re. 1. The subsidy on barbed wire is to be at a flat rate of Rs. 50 per cwt. (Source : Agricultural Plan p. 120).

Requirements of Fence Posts

N—Number of Fence Posts ('000). S—Government Subsidy (Rs. '000).

	1958		*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
	N	*S*	*N*	*S*	*N*	*S*	*N*	*S*	*N*	*S*	*N*	*S*	*N*	*S*	*N*	*S*	*N*	*S*	*N*	*S*	*N*	*S*
Small-holdings	528	686⅖	660	858	660	858	660	858	660	858	660	858	660	858	660	858	660	858	660	858	660	858
Estates	624¼	624¼	765	765	765	765	765	765	765	765	765	765	765	765	765	765	765	765	765	765	765	765

For 1958 the area of 20,000 to be replanted was divided in the proportions mentioned above—i.e. 7,200 acres in small-holdings. 5,000 acres in Estates 21·99 and 7,800 in Estates 100 acres and above. These in turn were divided by the average replanting unit appropriate for each size group (Agricultural Plan p. 120)—3 acres, 6 acres and 15 acres respectively. The one divided by the other yielded the number of units of each size group on which replanting would be carried out. The number of fence posts required for each unit is also given in the same document. This number multiplied by the number of units gave the number of fence posts required on all the units of each category. The Agricultural Plan gives the number of fence posts required to replant 25,000 acres and hence no adjustment is needed.

TABLE 5 (*contd.*)

Requirement of Barbed Wire

The Agricultural Plan (p. 121) calculates the quantity of barbed wire required if 25,000 acres are replanted annually. An adjustment on the same basis as used above was performed to derive the number required if 20,000 acres are replanted.

W—Cwt. of Barbed Wire ('000) S—Government Subsidy (Rs. '000)

	1958		*1959*		*1960*		*1961*		*1962*		*1963*		*1964*		*1965*		*1966*		*1967*		*1968*	
	W	*S*	*W*	*S*	*W*	*S*	*W*	*S*	*W*	*S*	*W*	*S*	*W*	*S*	*W*	*S*	*W*	*S*	*W*	*S*	*W*	*S*
Small-holdings	16*	840	21	1,050	21	1,050	21	1,050	21	1,050	21	1,050	21	1,050	21	1,050	21	1,050	21	1,050	21	1,050
Estates	12*	608*	18	900	18	900	18	900	18	900	18	900	18	900	18	900	18	900	18	900	18	900

* 16=16,800
* 12=12,177
*608=608,850

TABLE 6

Increase of Output Due to Replanting

ASSUMPTION : Yield per acre in areas replanted increase progressively to maximum as follows :—

	Nuts		Nuts
7th year	1,000	12th year	2,250
8th ,,	1,250	13th ,,	2,500
9th ,,	1,500	14th ,,	2,750
10th ,,	1,750	15th ,,	3,000
11th ,,	2,000		

(No estimates available of areas replanted by Estates with with their own seedlings)

Acreage replanted prior to 1958 :—

1948	5,457	1953	10,674
1949	5,690	1954	11,507
1950	7,157	1955	14,000
1951	9,573	1956	16,000
1952	9,107	1957	17,000

Source : Interim Report of Planning Council Coconut Working Group. Annual data used from 1955. For previous years—CRI information on seedlings issued plus annual average difference from 59,167 acres as given in Interim Report.

Index : A — Acreage
O — Output (Million nuts)

	1958		1959		1960		1961		1962		1963	
	A	O	A	O	A	O	A	O	A	O	A	O
7th year or 1st year in bearing —1,000 nuts	9,573	9·6	9,107	9·1	10,674	10·7	11,507	11·5	14,000	14·0	16,000	16·0
8th year or 2nd year in bearing —1,250 nuts	7,157	8·9	9,573	12·0	9,107	11·4	10,674	13·3	11,507	14·4	14,000	17·5
9th year—1,500	5,690	8·5	7,157	10·7	9,573	14·4	9,107	13·7	10,674	16·0	11,507	17·3
10th year—1,750	5,457	9·5	5,690	10·0	7,157	12·5	9,873	16·8	9,107	15·9	10,674	18·7
11th year—2,000			5,457	10·9	5,690	11·4	7,157	14·3	9,573	19·1	9,107	18·2
12th year—2,250					5,457	12·3	5,690	12·8	7,157	16·9	9,573	21·5
13th year—2,500							5,457	13·6	5,690	14·2	7,157	17·9
14th year—2,750									5,457	15·0	5,690	15·6
15th year—3,000											5,457	16·4
16th year—3,000												
17th year—3,000												
18th year—3,000												
19th year—3,000												
20th year—3,000												
Total	27,877	36·5	36,984	52·7	47,658	72·7	59,165	96·0	73,165	125·5	89,165	159·1

	1964		1965		1966		1967		1968	
	A	O	A	O	A	O	A	O	A	O
7th year or 1st year in bearing —1,000 nuts	17,000	17·0	20,000	20·0	25,000	25·0	25,000	25·0	25,000	25·0
8th year or 2nd year in bearing —1,250 nuts	16,000	20·0	17,000	21·3	20,000	25·0	25,000	31·3	25,000	31·3
9th year—1,500	14,000	21·0	16,000	24·0	17,000	25·5	20,000	30·0	25,000	37·5
10th year—1,750	11,507	20·1	14,000	24·5	16,000	28·0	17 ,000	29·8	20,000	35·0
11th year—2,000	10,674	21·3	11,507	23·0	14,000	28·0	16,000	32·0	1,7000	34·0
12th year—2,250	9,107	20·5	10,674	24·0	11,507	25·9	14,000	31·5	16,000	36.0
13th year—2,500	9,573	23·9	9,107	22·8	10,674	26·7	11,507	28·8	14,000	35.0
14th year—2,750	7,157	20·7	9,573	26·3	9,107	25·0	10,674	29·4	11,507	31·6
15th year—3,000	5,690	17·1	7,157	21·5	9,573	28·7	9,107	27·3	10,674	32·0
16th year—3,000	5,457	16·4	5,690	17·1	7,157	21·5	9,573	28·7	9,107	27·3
17th year—3,000			5,457	16·4	5,690	17·1	7,157	21·5	9,573	28·7
18th year—3,000					5,457	16·4	5,690	17·1	7,157	21·5
19th year—3,000							5,457	16·4	5,690	17·1
20th year—3,000									5,457	16·4
Total	106,165	198·0	126,165	240·9	151,165	292·8	176,165	348·8	201,165	408·4

TABLE 7

COCONUTS—ESTIMATES OF OUTPUT

. (Acres '000)
(Output Million nuts)

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Total acreage	1·100	1·100	1·100	1·100	1·100	1·100	1·100	1·100	1·100	1·100	1·100
Acreage to be replanted	·020	·025	·025	·025	·025	·025	·025	·025	·025	·025	·025
Cumulated	·020	·045	·070	·095	·125	·145	·170	·195	·220	·245	·270
Acreage not replanted or previously replanted	1·080	1·055	1·030	1·005	·980	·995	·930	·905	·880	·855	·830
Area previously replanted coming into bearing or already bearing (106·00 acres have been replanted prior to 1958)	·014	·006	·008	·009	·014	·016	·017				
Cumulated	·014	·020	·028	·037	·051	·067	·084				
Acreage not replanted and in bearing	974	949	924	899	874	849	824	799	774	749	724
Average (1953-57) output from acreage in bearing taken to represent 1957 output.	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291
Loss of output due to replanting assuming uprooting of old trees after 3 years of new planting and loss of yield at 750 nuts per acre (e.g. 1955 replanted areas uprooted in 1958)	10·5	11·9	12.8	15·0	18·8	18·8	18·8	18·8	18·8	18·8	18·8
Cumulated—	10·5	22·4	35·3	50·3	69·1	87·9	106·7	125·5	144·3	163·1	181·9
Output from not replanted areas in bearing and from old trees in replanted areas	2,280·5	2,268·6	2,255·7	2,240·7	2,221·9	2,203·1	2,184·3	2,165·5	2,146·7	2,127·9	2,109·1
Replanted acreages containing old trees in bearing (acres)	53,000	62,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000
Output from old trees in replanted areas at 750 nuts per acre ..	39·8	46·5	50·3	50·3	50·3	50·3	50·3	50·3	50·3	50·3	50·3
Output from not replanted areas in bearing—uncorrected for senility and fertiliser	2,240·7	2,222·1	2,205·4	2,190·4	2,171·6	2,152·8	2,134·0	2,115·2	2,096·4	2,077·76	2,058·8
Average yield per acre on not replanted areas—uncorrected for senility or fertiliser (nuts)	2,301	2,342	2,387	2,437	2,485	2,536	2,590	2,647	2,709	2,774	2,844
Yield per acre corrected for senility—rate ½ per cent. per year cumulative (nuts)	2,289	2,319	2,351	2,388	2,423	2,460	2,499	2,541	2,587	2,635	2,688
Total output from not replanted areas corrected for senility	2,229	2,201	2,172	2,147	2,118	2,089	2,059	2,030	2,002	1,974	1,946

TABLE 7 contd.

Coconuts—Estimates of Output—(*contd.*)

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Increase in output due to fertiliser											
Scheme A : Estimated input of fertiliser according to present scheme (tons)	35,000	40,000	45,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Increase over 1953-57 input 12,000 tons	23,000	28,000	33,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000
Scheme B · Estimated input of fertiliser on expanded programme (tons)	35,000	40,000	45,000	50,000	55,000	60,000	65,000	70,000	75,000	80,000	85,000
Increase over 1953-57 input ..	23,000	28,000	33,000	38,000	43,000	48,000	53,000	58,000	63,000	68,000	73,000
Increase of output under A	135·4	161·0	196·0	231·0	266·0	266·0	266·0	266·0	266·0	266·0	266·0
Increase of output under B	135·4	161·0	196·0	231·0	236·0	301·0	336·0	371·0	406·0	441·0	476·0
Assumption—1 ton of fertiliser gives an increase of 7,000 nuts with 1 year time lag. The effects of weather on output as in 1956 and 1957 when 31,320 and and 31,341 tons of fertiliser were applied are abstracted.											
Total output from not replanted areas under A	2,364·4	2,362	2,368	2,378	2,384	2,355	2,325	2,296	2,268	2,240	2,212
Yield per acre (nuts)	2,428	2,489	2,563	2,645	2,728	2,774	2,822	2,874	2,930	2,991	3,055
Total output from not replanted areas under B	2,364·4	2,362	2,368	2,378	2,384	2,390	2,395	2,401	2,408	2,415	2,422
Yield per acre (nuts)	2,428	2,489	2,563	2,645	2,728	2,815	2,907	3,005	3,111	3,224	3,345
Output from newly planted areas											
Newly planted area coming into full bearing bearing is assumed at 3,000 acres each year	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Output											
Yield of 2,500 nuts per acre	7·5	7·5	7·5	7·5	7·5	7·5	7·5	7·5	7·5	7·5	7·5
Cumulated	7·5	15·0	22·5	30·0	37·5	45·0	52·5	60·0	67·5	75·0	82·5

TABLE 8

Total Output of Coconuts

(*million nuts*)

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
(1) Output from replanted areas	36·5	52·7	72·7	96·	125·5	159·1	198·	240·9	292·8	348·7	408·4
(2) Output from old trees in replanted areas	39·8	46·5	50·3	50·3	50·3	50·3	50·3	50·3	50·3	50·3	50·3
(3) Total output from newly planted areas	7·5	15·0	22·5	30·0	37·5	45·0	52·5	60·0	67·5	75·0	82·5
(4) Total output from not replanted areas under assumption A	2,364·4	2,362	2,368	2,378	2,384	2,355	2,325	2,296	2,268	2,240	2,212
(5) Total output from not replanted areas under assumption B	2,364	2,362	2,368	2,378	2,384	2,390	2,395	2,401	2,408	2,415	2,422
Grand total under Scheme A	2,448·2	2,476·2	2,513·5	2,554·3	2,597·3	2,609·4	2,625·8	2,647·2	2,678·6	2,714·	2,753·2
Grand total under Scheme B	2,448·2	2,476·2	2,513·5	2,554·3	2,597·3	2,644·4	2,695·8	2,757·2	2,818·6	2,889·	2,963·2

Increase in 1968 under A : 230 million nuts.

Increase in 1968 under B : 440 million nuts.

TABLE 9

Local Consumption

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Population	9,948	10,248	10,556	10,873	11,197	11,531	11,874	12,229	12,594	12,967	13,351
Local consumption (million nuts)	1,224	1,261	1,298	1,337	1,377	1,418	1,461	1,504	1,549	1,595	1,642
Assumption-per capita local consumption (including industrial uses) 123 nuts per head. No changes in stocks											
Value of local consumption at 14 cents per nut *ex* farm Rs. Million.	171	177	182	187	193	199	205	211	217	223	230

TABLE 10

Exports

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Total output under A (million nuts)	2,448	2,476	2,514	2,554	2,597	2,609	2,626	2,647	2,673	2,714	2,753
Total output under B (million nuts)	2,448	2,476	2,514	2,554	2,597	2,644	2,696	2,752	2,819	2,889	2,963
Exports under A (million nuts)	1,224	1,215	1,216	1,217	1,220	1,191	1,165	1,143	1,130	1,119	1,111
Exports under B (million nuts)	1,224	1,215	1,216	1,217	1,220	1,226	1,235	1,248	1,270	1,294	1,321
Value of exports (Rs. million) Scheme : A	202	200	201	201	201	197	192	189	186	185	183
Value of exports (Rs. lb.) Scheme : B	202	200	201	201	201	202	204	206	210	214	217
Average price in 1957 in terms of nuts : i.e, 16.5 cents per nut											

TABLE 11

Total Investment in Coconut

(Rs. million)

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Investment on :										
(*a*) **Replanting**	18	20	22	23	24	24	24	24	24	24
(*b*) **New land**	5	5	5	5	5	4	4	4	4	4
(*c*) **Buildings and machinery**	4	4	4	4	4	4	4	4	4	4
Total	27	29	31	32	33	33	33	33	33	33

TOTAL OUTLAY—Rs. 315 million

TABLE 12

Labour Requirements for Coconut

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
(1) Acreage (excluding town and village gardens)	920,933	920,933	920,933	920,933	920,933	920,933	920,933	920,933	920,933	920,933
(2) Labour force on above	74,208	74,208	74,208	74,208	74,208	74,208	74,208	74,208	74,208	74,208
(3) Total area rehabilitated annually	320,000	360,000	400,000	440,000	480,000	520,000	560,000	600,000	640,000	680,000
(4) Additional labour on rehabilitated area	9,600	10,800	12,000	13,200	14,400	15,600	16,800	18,000	19,200	20,400
(5) Additional labour on new estate areas (cumulated)	100	200	300	400	500	600	700	800	900	1,000
Total labour force (2+4+5)	83,908	85,208	86,508	87,808	89,108	90,408	91,708	93,008	94,308	95,608

Note.—Total area rehabilitated annually is derived from the fertilizer distributed under the expanded subsidy scheme for fertilizer. One ton of fertilizer is sufficient to manure 8 acres (Agricultural Plan, p. 117).

The additional labour requirement, estimated in consultation with the Commissioner for Coconut Rehabilitation, has been calculated on the basis that each acre rehabilitated requires an additional 0·03 persons per acre.

The total new area developed is assumed to be 30,000 acres divided between Estate and Small-holdings in the same proportion as now. On this basis 9,600 acres will be opened by Estates and 20,400 acres in small-holdings. The additional labour requirement is calculated only for the Estates, small-holders being assumed to be less under-employed as a result of opening up of new lands.

CHAPTER 6

THE NON-EXPORT AGRICULTURAL SECTOR

THE objective in the agricultural export sector was to maximise export earnings. In the non-export sector the objective is to replace as much as possible of the products presently imported by local production. The one policy earns foreign exchange, the other conserves it.

The question may be raised at the outset whether the objective of maximum import substitution is a sufficient guide by itself to determine the future path of agricultural development. The answer is clear. As the sole criterion of development the principle can sometimes lead to a misallocation of resources. For example, encouraging the domestic production of a commodity which is imported at present can prove to be quite uneconomic if the same resources could be used more profitably to produce an alternative product which is not imported. The principle should be to invest in those sectors or projects which will maximise national income. Nevertheless in the context of this country these two objectives are more likely to coincide than to be opposed to each other. The problem of choosing between them is not, therefore, of great significance in practice.

The Contribution of Agricultural Products to National Income

There are at present no reliable figures of the value added per acre to national income by the various crops. In the absence of this the closest approximations are provided by estimates of gross returns per acre. This is an imperfect substitute since the cost of intermediate goods have to be deducted to arrive at value added. This process can affect the relative position of the crops quite substantially. It is therefore hazardous to base a cropping pattern entirely on these figures. Despite these limitations, however, the gross return per acre does afford some indication of the contribution of each crop to national income and to foreign exchange saving.

The gross return per acre depends upon the yield per acre of each crop and its unit value. The table below compares such returns for a number of commodities. The commodities selected are those which are at present imported in substantial quantities and which are capable of being produced locally. The yield per acre adopted is either the present yield or that which the Department of Agriculture considers to be within reach. Rice by virtue of its importance has been accorded special treatment. The gross return from paddy has been calculated at an assumed average yield of 48 bushels per acre which is the minimum yield objective set for 1968. Alternative calculations have also been made on the basis of single and double cropping. The value per unit of output is the average 1957 import price derived from the quantity and value of imports in 1957.

TABLE I

Comparative Gross Return Per Acre

Commodity	*Average import price in 1957* *Rs.*	*Average yield per acre*	*Gross return per acre* *Rs.*
Tobacco (cigarettes)	3·75 per lb. of cured leaf	700 lbs. of cured leaf	2,625
Sugar	656·3 per ton	4 tons of sugar	2,625
Tobacco (beedi)	4·31 per lb.	500 lb. cured leaf	2,155
Potatoes	21·3 per cwt.	94 cwt.	2,002
Chillies	108·14 per cwt.	9·91 cwt.	1,072
Cotton	4 per lb. of cotton	560 lb. of seed cotton or 166·17	664
Rice	6·77 per bushel of paddy	96 bushels (double cropping with a yield each season of 48 bushels)	650
Rice	6·77 per bushel	48 bushels	324

The high gross returns per acre from tobacco and sugar are quite striking. However, in the case of sugar the gross return from a purely agricultural standpoint is inflated since processing costs are included in export prices. If allowance is made for processing costs at the rate of Rs. 1,000 for 4 tons (as in the proposed scheme of local manufacture) the agricultural gross return for sugar will be reduced to Rs. 1,625 per acre. No less striking is the low position of rice. Even on the most favourable assumptions—i.e., double cropping with an average yield of 48 bushels per acre each season—the gross return is only Rs. 650. This alone suggests a reassessment of present land use policy, with its extreme emphasis on paddy. It must be noted, however, that the gross return from rice in the above table has been calculated at the national average yield of 48 bushels per acre. But in those areas where competition for the land between for example, rice and sugar occurs, the average yield of paddy will certainly be higher than the national average. This will tend to alter their relative competitive positions.

The Magnitude of Agricultural Imports

To set the objective of import substitution of agricultural products in its proper perspective, the table below shows the import cost of the major agricultural products in 1957. The total value of imports in that year was Rs. 1,713 million; of this as much as Rs. 647 million was spent on the import of agricultural consumption goods..

TABLE II

Agricultural Imports, 1957

Commodity imported	*Value* *Rs. m.*	*As per cent. of the agricultural imports*
Rice	254·9	39
Flour	85·3	13
Dairy products : eggs and honey	62·9	10
Sugar and Sugar preparatis	84·1	13
Fruits and vegetables	29·6	5
Pulses	39·3	6
Tobacco	18·9	3
Potatoes	15·4	2
Meat and meat preparations	5·5	1
Other agricultural imports	51·0	8
Total Agricultural Imports	646·9	38% of *all* retained imports
Total Retained Imports (all commodities)	1,712·7	

The import of rice and flour together, valued at Rs. 341 million, caused the largest foreign exchange outflow. The other sizeable import items in agriculture were sugar, milk and milk products, fruits, vegetables and pulses.

It was argued earlier that the planning of agricultural development should ensure the twin objectives of maximising national income as well as foreign exchange saving. These objectives would broadly be satisfied by programmes aiming at the local production of many of the commodities listed above. It is of course clearly impractical to attempt to produce locally every single item in the major categories above. Wheat for example, cannot be grown locally with success (although there are possibilities of milling). There would be similar items in other categories as well. In these cases the alternative would be to grow acceptable substitutes. But within practical production possibilities, programmes of development should aim at the local production of many of the commodities at present imported.

It is, however, obviously impossible to attain self-sufficiency at once even in respect of those commodities that can be grown with success locally. This applies in particular to those products where domestic production is as yet either negligible or fills only a small proportion of total requirements. It is necessary, therefore, to plan in terms of a reasonable period of time. However, it is important to emphasise that consumption itself will not remain unaltered. The growth of population would by itself lead to an increase in total consumption. It is necessary therefore to base production programmes on estimates not merely of present but of future consumption as well. In the section that follows estimates of future consumption are made in terms of the 10-year period chosen for the overall Plan.

Estimates of Future Consumption

The succeeding table estimates, first, the 1957 total consumption of 11 items (Column 3) derived from local production data and import statistics. These items, excluding wheat flour, were the major agricultural commodities imported in 1957. Their total in foreign exchange cost was Rs. 390 million which is just under 55% of the value of all agricultural imports. The expected demand for these commodities in 1968 has also been estimated. These estimates have been drawn up on two sets of assumptions. Column 4 shows our requirements on the assumption that the level of per capita consumption remains unaltered. This figure, in other words, takes account of only the increase in population between 1957 and 1968. Since population is estimated to increase by 38% these figures, in effect, show a corresponding increase in consumption. Column 5 takes account of changes in per capita consumption arising out of income elasticities and changes in standards of living. These indicate, even more realistically, the magnitudes of demand by 1968.

TABLE III

Estimated Consumption of Agricultural Products, (1957 and 1968)

Commodity	*Unit*	*Estimated consumption 1957**	*Estimated total consumption in 1968 at constant per capita consumption*	*Estimated total consumption in 1968 at adjusted per capita consumption rates*
(1)	(2)	(3)	(4)	(5)
1. Paddy(*a*)	'000 bushels	69,105	95,365	103,358
2. Milk(*b*)	'000 pints	358,785	495,123	538,350
3. Meat	'000 cwt.	276	381	387
4. Tobacco (beedi)	'000 lb. cured leaf	2,797	3,860	4,223
5. Eggs	'000	119,787	165,306	195,523
6. Tobacco (cigarettes and other)	'000 lb. cured leaf	7,592	10,477	11,490
7. Potatoes	'000 cwt.	726	1,002	1,012
8. Chillies	'000 cwt.	565	780	780
9. Onions (red)	'000 cwt.	984	1,358	1,358
10. Coffee	'000 lb.	1,344	1,854	1,928
11. Cane (sugar)	'000 tons sugar	129	178	276

**Source :* Department of Census and Statistics, and Customs Returns.

Notes.—(*a*) Imported rice has been converted into paddy.

(*b*) Milk products have been converted into their milk equivalent.

The objective in this sector, as stated earlier, is to make us as self supporting as is economically feasible. Since all the items analysed above are or could be produced in this country economically the aim should be to expand or commence production on a scale sufficient to meet, if not all, at least the major part of our requirements.

Output and Acreage Requirements for Self-sufficiency

The figures of expected demand in 1968 permit an assessment to be made of the effort involved in becoming self-sufficient at the end of the 10-year period. For this purpose the domestic production in 1957 of each commodity has been deducted from 1968 requirements. The difference represents the increase over the 1957 output needed for self-sufficiency by 1968. To look at it in another way, if the domestic production of these items remains at the 1957 level the quantities shown below will have to be imported to satisfy 1968 consumption requirements.

The table below also shows the additional area that should be harvested or the extra units of production (e.g., milk cows) needed to secure the required increase in domestic output. This is a function of the yield per acre or per animal. For example, the higher the yield per acre the smaller the area to be harvested. Either the present yield per acre where satisfactory, or one which is attainable in the 10-year period has been used for the calculation. In those instances where a higher average yield than prevailing at present is used, the higher yield figure has first been applied to the area or units now in production. This gives the output in 1968 from the present sown acreage. The result is then deducted from the estimated requirements in 1968 after which the additional area to be harvested is estimated. To illustrate, the paddy output from the present harvested acreage of 1,157,000 acres is 31,500,000 bushels. By 1968 with an average yield of 48 bushels, the output from this area would increase to 54,576,000 bushels. The additional harvested area needed in 1968 is obtained by dividing the difference between 1968 requirements and the figure above by the average yield of 48 bushels per acre.

The results of these estimates are of some significance. At constant 1957 levels of per capita consumption an additional 974,000 acres under the various crops (excluding the acreage requirements for milk, meat and eggs) would need to be harvested for self-sufficiency in 1968. At the higher level of per capita consumption on the other hand, the extra harvested acreage needed would amount to 1,168,000 acres. It should be borne in mind that these figures refer to harvested acres and not actual land acres. The land acres can be very different depending, for example, on whether double cropping or rotational cropping is possible.

TABLE IV

Requirements for Self-Sufficiency in 1968

	Domestic production 1957	*Required increase in domestic production for self-sufficiency*		*Yield per acre or unit of production*	*Additional harvested acres or units o production for self-sufficiency*	
		A *at present per capita consumption levels*	*B* *at adjusted per capita rates*		*A* *at present consumption levels*	*B* *at adjusted rates*
	('000)	('000)	('000)		('000)	('000)
Paddy (bushels)	31,500	63,865	71,850	48 bushels	849 acres	1,016 acres
Milk (pints)	152,889	342,234	385,468	1,100 pints per milk cow	112 milk cows	151 milk cows
Meat (cwt.)	253	128	133			
Beedi tobacco (lb. cured leaf)	—	3,860	4,223	500 lb.	7·7 acres	8·4 acres
Eggs (no.)	93,640	71,666	101,888	125 eggs per layer	573 layers	815 layers
Cigarette tobacco (lb. cured leaf)	5,750	4,727	5,740	700 lb.	6·75 acres	8·2 acres
Potatoes (cwt.)	4	998	1,014	100 cwt.	10 acres	10 acres
Chillies (cwt.)	282	498	498	11 cwt.	45 acres	45 acres
Onions (cwt.)	982	376	376	50 cwt.	7·5 acres	7·5 acres
Coffee (lb.)	—	1,854	1,926	4 cwt.	4·6 acres	4·3 acres
Cane (sugar) (tons)	—	178	272	4 tons sugar	45 acres	68 acres

The Ten-Year Programme

It is with this background regarding needs and the additional output required for self-sufficiency that the investment programme has been formulated. For this task discussions were held with the Ministries of Agriculture and Food, and Lands and Land Development. In addition. much use was made of the information contained in the Agricultural Plan of the Ministry of Agriculture, and also of the future programme of the Ministry of Lands and Land Development. Most of these programmes, however, did not cover the full ten-year period, nor did they contain all the material required for drawing up a comprehensive plan. In such instances the programmes were extended to cover the decade. using the material and data contained in the individual documents.

OUTPUT

The analysis made earlier presented two sets of estimates of demand in 1968 for various commodities based on alternative assumptions. The first estimated Ceylon's requirements on the assumption that per capita consumption remains constant while the second was adjusted to take account of possible changes in per capita consumption. The former should be regarded as the minimum demand for these products while the latter as the probable magnitude of the needs at the end of the decade. The general objective set in the programme presented below has been to expand domestic production of the different commodities to meet at least our minimum requirements in 1968, i.e., on the basis that per capita consumption remains constant. In addition, it is aimed to produce locally all our requirements of some commodities calculated on the adjusted basis, e.g., eggs, cane, &c. Rice, however, falls into neither of these two categories In its case an assessment of the level of output in 1968 based on the planned extensions of acreage and an increase in the average yield per acre has been made. Any difference between these targets of production and the adjusted demand, would need to be imported. Increasing production on this scale is by no means an easy task as in many commodities the present output is either negligible or meets only a small proportion of our needs. Provision for some imports of a few commodities is required in any case as there will continue to be a limited demand for a few imported products, such as cheese or cigarettes and tobacco. It would be unrealistic to neglect this aspect of consumer demand.

Targets of output in 1968 both in physical terms and by value are presented below. For the purpose of comparison the equivalent figures for 1957 are also shown. Since constant 1957 ex-farm prices have been used, the output figures indicate the increase in real terms.

TABLE V

Targets of Output, 1968

	Production, 1957		*Production*, 1968		*Index*
	Quantity ('000)	*Value* (Rs. '000)	*Quantity* ('000)	*Value* (*Rs.* '000)	
Paddy (bushels)	31,500	350,416	76,992	856,922	244
Milk (pints)	152,889	42,809	495,123	138,634	323
Meat (cwt.)	253	27,185	381	40,000	147
Eggs (no.)	100,000	17,000	196,528	33,240	196
Tobacco (beedi) (lbs.)	—	—	3,860	16,637	∞
Tobacco (lbs.) (cigarettes other)	5,750	13,688	10,477	27,869	204
Potatoes (cwt.)	4	128	1,018	32,576	∞
Chill[illegible] (cwt.)	282	11,771	780	32,626	278
Onions (cwt.)	982	22,586	1,358	31,234	138
Coffee (cwt.)	—	—	1,926	2,947	∞
Cane (tons)	—	—	272	68,000	∞
Other agriculture	—	429,984	—	729,634	170
Total	—	915,567	—	2,010,319	219

Note.—Production has been valued at constant 1957 *ex* farm prices.

The estimates of production and value cover a planned sector and an unplanned sector. The latter, classified in the above table as Other Agriculture, include the innumerable other agricultural products such as fruits, vegetables, betel, &c., for which no detailed individual plans have been formulated but whose output will inevitably expand as a result of the increased demand for agricultural products. It also includes the minor agricultural export crops such as cocoa, cinnamon, citronella, &c., which in 1957 earned around Rs. 39 million of foreign exchange. By 1968 the foreign exchange earnings from them would have risen to Rs. 60 million, largely through an expansion in cocoa output as well as through a more moderate expansion in the others.

The expansion envisaged in this sector as a whole is of considerable magnitude. Within the planned sector the commercial production of cane, beedi tobacco, coffee and potatoes will be commenced. Relatively large increases in output are also expected from paddy, milk, chillies and other tobacco, while the increase in meat, eggs and onions will be more moderate as local production already suffices to meet a substantial proportion of our present requirements. In terms of its contribution to Gross Domestic Product the value of output will rise from Rs. 916 million in 1957 to Rs. 2,010 million in 1968. This is an increase of 119%. This increase may appear phenomenal at first sight. But this sector is operating at much below capacity and at a very low level of efficiency. It is imperative if the development of this country is not to be retarded, and if this sector is not to act as a brake on the pace of economic advancement that the efficiency and productivity of farming be raised steeply. The various measures and schemes to bring this about are discussed later in some detail. With their implementation there is no reason for the planned increase in output not being realised.

The burden of development in this sector will devolve largely on peasant producers. To aid them achieve these targets the Government will provide the services and incentives without which the entire programme will be imperilled. Hence the Agricultural Extension Service will be reorganised to enable producers to obtain the advice and technical assistance they need so urgently. The credit institutions serving the rural areas will also be refashioned to meet the entire credit needs of the agricultural population, short, medium and long term as well as for productive or for consumption purposes. Furthermore, the extension service and the credit institutions will operate in close co-operation to ensure that producers use the loans they obtain in a constructive and profitable manner and not fritter away their resources. A system of supervised credit is essential for the implementation of this programme. This would maximize the repayment capacity of borrowers and enhance the probabilities of loan recovery. Finally, the marketing institutions serving rural producers will be improved to enable them to sell their produce at fair and reasonable prices. To this end the shortcomings and abuses in the Guaranteed Price Scheme which covers a variety of local products will be remedied. New institutions such as a fully equipped Meat Marketing Board and a Vegetable and Fruit Marketing Board will be established. The activities of the Milk Board will be extended until it covers the entire country. In addition, producers will be encouraged to make the fullest use of the multi-purpose Co-ops. for the marketing of their produce. Government policy will thus be aimed at improving and extending the ancillary services which are basic to the successful implementation of the investment programme.

FOREIGN EXCHANGE IMPLICATIONS

The direct effect of this production programme will be a dimunition in the demand for food imports. The strain on the balance of payments will thereby be eased. In the first place given these two projections of demand the imports required to fulfil our consumption needs are estimated. In 1957 our total agricultural imports excluding fish were valued at Rs. 647 million. From this certain items have been transferred to the Industrial Sector as they were processed commodities. The cost of the purely agricultural imports was Rs. 476 million. Adopting the "adjusted" consumption requirements as representing the probable level of demand in 1968, the imports required over and above our domestic production to satisfy this demand is shown below :

TABLE VI

Import Requirements, 1968

Commodity	*Value of imports in* 1957 (*Rs.* '000)	" *Adjusted* " *consumption requirements in* 1968 ('000)	*Domestic output in* 1968 ('000)	*Quantity of imports in* 1968 ('000)	*Value of imports in* 1968 (*Rs.* '000)
Paddy (bushels)	254,852	103,350	76,922	26,428	178,444
Milk (pints)	59,565	538,357	495,123	43,234	12,538
Meat (cwt.)	5,483	386	381	5	1,190
Eggs (number)	3,289	195,528	195,528	—	—
Beedi Tobacco (lb.)	11,595	4,223	3,860	363	1,565
Cigarette Tobacco (lb.)	6,447	11,490	10,477	1,013	3,809
Potatoes (cwt.)	15,382	1,018	1,018	—	—
Chillies (cwt.)	30,653	780	780	—	—
Onions (cwt.)	15	1,358	1,358	—	—
Coffee (lb.)	2,111	1,926	1,926	—	—
Cane (sugar) (tons)	—	272	272	—	—
Other Agriculture	86,432	—	—	—	76,929
Total	475,824	—	—	—	274,475

Note.—Imports in 1968 have been valued at 1957 import prices.

Just as in Table V these estimates comprise a planned and an unplanned sector. In the unplanned sector too the objective of maximum import substitution will be pursued as vigorously as in the other. It is visualised that an increasing segment of consumption will be met by local production resulting in a decline in imports. At the end of the ten year period, despite an increase in total and per capita consumption, the value of these imports would have declined below the present level.

The same is true of all the other commodities where imports are required to satisfy our consumption requirements. In all of them imports in 1968 will be significantly lower than in 1957. In the case of paddy which is the largest import item in this sector imports will decline to approximately Rs. 178 million from the present Rs. 255 million. The import cost of milk products, meat and all tobacco also show quite considerable reductions. Finally, there is another category of goods in which planned local production would be adequate to meet even our "adjusted" consumption requirements. Eggs, Potatoes, Cane (sugar), Chillies, and Onions fall into this category. Regarded as a whole agricultural imports in 1957 cost Rs. 476 million. By 1968 in spite of the fact that total population would have increased by 38% and that the individual standard of living would also have risen somewhat, the agricultural imports will cost only Rs. 274 million. Moreover, even this latter figure may decline still further as the production programme presented earlier may be exceeded.

Furthermore, the foreign exchange cost of the intermediate goods required for the implementation of this programme is not very considerable. The largest single intermediate good of foreign origin will probably be fertiliser. Others will be cement for the construction of irrigation works, mechanical equipment, fuel, pesticides and insecticides as well as other agricultural tools. As the local output of fertiliser and cement expands the foreign exchange cost of the intermediate goods will diminish still further. The import cost of these intermediate goods have in any case been included in the Table V "Aspects of the Industrial Programme" in the chapter on Industries.

What would be the repercussions on the balance of payments if this planned production does not take place ? In such an eventuality the whole of the adjusted demand for foodstuffs in 1968 less present production would need to be imported. For the planned sector of 11 commodities alone the foreign exchange requirements would be of the order of Rs. 890 million. If the unplanned sector is also included this may well rise to about Rs. 1,000 million. This figure by itself is an indication that unless the output of exports increases very sharply or import replacement on a gigantic scale is possible in other sectors to permit food imports of this magnitude, the standard of living will inevitably suffer. From the point of view of foreign exchange saving, the real benefit of this agricultural programme is the difference between this Rs. 1,000 million and Rs. 285 million which is the anticipated cost of food imports in 1968. This programme in effect represents a saving of Rs. 715 million in foreign exchange.

INVESTMENT

Estimates have also been made of the investment cost of this programme. Due to the lack of essential data these estimates should be regarded only as tentative approximations. In many instances no information whatsoever concerning the investment required is available. This is, of course, inevitable when an ambitious investment programme, incorporating many new lines of production is first formulated. Once the various schemes are undertaken these estimates will be subject to a process of refinement. Nevertheless, the figures indicate the broad magnitude of investment required if this programme is to be fulfilled.

The investment figures relate only to the purely agricultural aspects of the programme. Thus the cost of building colonists' houses and other such buildings, and of roads for new irrigation schemes are excluded here but are included in the housing and roads programmes. Similarly the cost of mechanical equipment used for construction purposes, e.g., tractors, bulldozers used by the Irrigation Department are also excluded here. But the cost of equipment used by agricultural producers for agricultural purposes, e.g., ploughs, harrows and tractors, is included in these estimates. It also omits subsidies given for non-capital purposes as well as the cost of purchase and application of fertilisers which is not regarded as investment. As illustrations of the type of investment that is included, the cost of providing irrigation works and irrigation channels, the cost of developing land and bringing it into production with crops such as rice, tobacco, potatoes and pasture, storage accommodation for the locally produced crops, and the cost of agricultural equipment all find a place here.

TABLE VII

Investment in other Agriculture (1959-68)

(Rs. million)

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Total*
(1) Capital cost of Land Development, *e.g.*, provision of irrigation facilities, agricultural development of new land in the Dry Zone, Highland Colonization and Forestry	51·3	58·3	78·4	88·7	100·1	113·8	124·1	142·0	154·8	180·5	1,092·0
(2) Investment for the development and expansion of crops and animal husbandry, including investment in storage and marketing, and agricultural machinery	44·3	50·9	58·0	62·5	71·0	79·8	89·1	98·0	108·5	120·5	782·5
(3) Total	95·6	109·2	136·4	151·2	171·1	193·6	213·2	240·0	263·3	301·0	1,874·5

In 1957 the investment in the same categories as above has been estimated at Rs. 90 million. The programme presented here commences at a figure not much above this but rises sharply after the first few years as the process of development gathers momentum. By 1968, investment will be just above Rs. 300 million. The estimates, especially for the later years are necessarily more vague and uncertain than those for the earlier years. Although they may appear high, nevertheless investment of this order is required to ensure a rising volume of agricultural products, particularly if difficulties in the balance of payments are to be avoided.

Of the two major categories investment on irrigation and land development absorbs the major share of the investment funds. This is a reflection of the emphasis laid on irrigation and colonization schemes. The entire capital cost of these projects is financed by the public sector. Private investment in this sphere is negligible. On the other hand a fairly large proportion of investment on the development and expansion of crops and animal husbandry will be made by the private sector. It may seem that relative to the anticipated expansion in total agricultural output the investment on the development of crops is small. It must not be forgotten, however, that a fair proportion of the increase in output takes place through a rise in the yield per acre or production unit, e.g., rice yields move from the present 32 bushels to 48 bushels per acre. Very little capital expenditure is required for this as an increase in rice yields will result largely through the adoption of improved techniques, more intensive application of fertiliser and through the establishment of an efficient extension service ; all these require only small amounts of investment. Agricultural output can be increased considerably without much additional investment by using more rational methods of production.

It is also difficult to determine the extent of the actual investment which will be financed directly from current agricultural income through savings. In all likelihood this may not be much since the incomes of peasant farmers are often too meagre to permit much saving. Farmers will therefore be compelled to depend largely on the existing credit institutions which is an added reason for their reorganisation.

EMPLOYMENT

In this sector the usual concept of employment where labour is supplied for a regular wage has very little relevance. In the rural areas agricultural producers are more usually self-employed farmers working on their own or family account. Even though each person may not own land the available work is spread out among the whole family since in peasant agriculture the members of a family work together as a single unit. To supplement their earnings some family members may work off the farm for wages especially during the slack period. But the extent of such work is largely dependent on the availability of employment opportunities particularly on neighbouring plantations. Consequently workers in the rural areas suffer more from under-employment rather than actual unemployment. In this sector therefore the aim is to provide the growing agricultural population with production patterns and possibilities which will absorb their labour more fully than at present. This will reduce the severity and incidence of under-employment.

It has been estimated that the agricultural labour force in 1957, excluding plantation workers was 1,046,000. By 1968 their number would have risen to 1,304,000 or an increase of 258,000 workers. The programme of land development in the Dry Zone over the 10 years envisages the re-settlement on economic holdings of nearly 100,000 family units, which would approximate to close on 130,000 workers. The highland colonization schemes aim at re-settling around 60,000 family units. Those re-settled under these schemes will obtain economically viable holdings which under intensive cultivation methods will absorb their labour more fully than at present. In addition, the programme for the development of sugar cane will provide regular employment for at least 24,000 persons on the present committed schemes. If the additional acreage required to make the country self-sufficient in sugar is also developed this will increase to 34,000. These three schemes alone will absorb very nearly the whole of the additional workers.

The rest of the rural workers will find that the severity of their underemployment will be steeply reduced as a result of the more intensive and diversified pattern of agriculture envisaged in the future. The production of many new commodities will be commenced, while the output of existing crops will be increased largely through the adoption of new and improved techniques most of which involve greater labour time. Thus the Japanese method of rice cultivation is very labour intensive. Similarly, animal husbandry and milk production when done on a large scale are labour intensive undertakings and, no less important, are not characterised by marked seasonal variations in labour requirements.

One measure of the transformation of peasant agriculture as well as of rural welfare is the gross productivity per worker. Given the agricultural labour force and the value of Gross Domestic Product arising in the non-export agricultural sector, the gross product per worker in 1957 was Rs. 875. By 1968 the equivalent figure will be Rs. 1,541. In other words the productivity of a worker in this sector will be about 76 per cent. higher in 1968 than it was in 1957.

The above estimates take no account of the secondary effects on employment consequent on the successful implementation of the programme. Employment in the ancillary services, such as transport, marketing, processing, &c., will necessarily increase. These have been excluded here as they do not fall within the agricultural sector.

Some Detailed Aspects of the Plan

The preceding section outlined some of the significant economic magnitudes and consequences of the agricultural programme. The succeeding discussion is devoted to the specific schemes and projects, including those for the individual commodities.

LAND AND LAND DEVELOPMENT

LAND USE SURVEYS

An expansion in agricultural output on the scale outlined earlier depends to some extent on the availability of additional land. A really reliable estimate of suitable land available for development can be had only from a definitive Land Use Survey. Such a Survey would weigh the agricultural potentialities of the various regions having regard to their physical and other characteristics, and would also delineate the methods and pattern of exploiting the land to the best advantage. With this information a national land use policy can be evolved, and the frittering away of our resources, both of land and capital, could thereby be eliminated. Few other schemes, in fact, would contribute as much to agricultural planning and development. Such a Survey has as yet to be conducted, though the need for one was highlighted by the I.B.R.D. Mission as far back as 1952.

This gap could be filled to some extent from the research work and data gathered by the Canadian Air Survey Team. However, though the necessary data have been collected, its systematic interpretation has yet to be undertaken. The Department of Agriculture too has recently started work on a complete land use survey. This project is expected to take 8 years, 3 years being required for the reconnaisance survey and 5 years for the detailed survey. All these surveys have been accorded the highest priority and work on them expedited to the maximum.

THE AVAILABILITY OF LAND IN THE WET ZONE

Of the total land area of approximately 16 million acres, around 30 per cent. or 4.8 million acres is usually reckoned to lie in this Zone. Since the entirety of the tea, and rubber, virtually all the coconut, and about 40 per cent. of the asweddumised paddy area as well as a variety of other subsidiary crops are grown in the Wet Zone the extent of uncultivated land cannot be substantial. Land hunger among the rural population and the relatively equable natural conditions within the Zone have already favoured the cultivation of the readily and easily cultivable land. Nevertheless there are grounds for belief that limited areas which are potentially cultivable still lie undeveloped.

Attempts have been made at different times to estimate the unutilised land in the Wet Zone. Some time back the Department of Census and Statistics carried out a survey to determine this. Earlier the Committee on the Utilisation of Crown Lands also tried to assess the cultivable land in the Wet Zone. The general conclusion that emerged was that almost the entire Wet Zone was being cultivated but that there were, however, a few pockets of land still available for future development. Most of such land should preferably carry export crops. The programme for the three major export crops has made provision for the investment required to bring parts of this land into cultivation. In addition some part of the undeveloped Crown Land, which is suited for these crops will be developed and alienated on a peasant allotment basis under the Highland Colonization Schemes of the Ministry of Lands and Land Development. Provision for this has been included under Highland Colonization Schemes.

There are, however, extents of land on which non-export crops could be grown with advantage. For example the programme for potatoes envisages its cultivation in up-country districts, especially on patna land. As much land as is required to make this country self-supporting by 1968 is readily available. Furthermore, the increased demand for many other commodities which are grown to some extent in the Wet Zone will favour the extension of cultivation to now idle land. Bringing these lands into cultivation will be not nearly as difficult nor as expensive as in the Dry Zone, largely because little or no irrigation which is the expensive operation in land development is required. The investment costs of developing such extents have been provided for under the programme for the individual crops.

THE AVAILABILITY OF LAND AND ITS DEVELOPMENT IN THE DRY ZONE

The Dry Zone consists of almost 12.2 million acres, the greater part of which is as yet undeveloped. Due to the pattern and variability of the rainfall as well as the geological structure of the land the agricultural development of this part of the country is contingent on the provision of irrigation. It has been the policy of the Government for some time now to provide the irrigation facilities and thereafter settle peasant cultivators on the developed land. Up to the end of 1957 slightly over 500,000 acres had been provided with irrigation under various major works. Many of the larger ancient irrigation works have now been restored ; those left are sited mainly in forest reserves or inaccessible spots. This has consequences on the future irrigation programme for the emphasis shifts from restoration to the " construction of impounding reservoirs for the multi-purpose of storage for irrigation, hydro-electric power development, flood protection and diversion of water from the wet zone areas into the dry zone ".

A change in the perspective of irrigation planning has also occurred which has contributd much to this shift in emphasis. Until recently irrigation projects were planned largely on a piecemeal basis, each individual irrigation scheme being viewed singly. This has now given place to planning on the basis of each River Basin. The Water Resources Board, which will be established in the near future, will be entrusted with the function of planning the development of the River Basins to ensure that the available water will be exploited most productively either in irrigation, electricity or a combination of them both. Each river basin will be studied as a single entity to ensure the maximum and systematic utilisation of the land and water resources in the whole basin. This would guarantee that the water and land resources are combined together in the most productive manner. The whole country, excluding the Jaffna Peninsular, can be divided into 103 River Basins. Of this number 26 major rivers, i.e., with a discharge exceeding 100,000 acre feet per annum, flow through or are in the Dry Zone. "The discharge from these catchments is now being partially used by the Major and Minor Irrigation Works in their catchments but in no single case can it be stated that the whole of the average annual discharge is being utilised at present. It is therefore necessary to utilise fully the run off in the Dry Zone catchments by providing for the storage of the surplus discharge which now flows into the sea". As for the Wet Zone rivers the problem is essentially one of flood control and drainage, and also attempting to divert the surplus discharge into the Dry Zone where the land is so urgently in need of irrigation. It is estimated that after these basins are fully developed irrigation facilities will be provided for 1,350,000 acres of land.

In the period under consideration in addition to continuation work under the Gal Oya Scheme work will commence on at least five Multi-purpose Schemes. These are: (1) the Mahaweli Ganga Diversion Scheme, (2) the Walawe Ganga Scheme, (3) the Malwatu Oya Scheme, (4) the Mahaweli Ganga Basin Scheme and (5) the Kelani Ganga Scheme. The preliminary work, such as the engineering surveys, was begun in 1956, and detailed investigations have already been undertaken. In the complex and difficult task of working out the engineering plans, designs and estimates for these Schemes foreign assistance has been obtained to guard against and minimize any errors. Accordingly, the detailed planning of the Mahaweli Ganga and Walawe Ganga basins have been entrusted to a team of American Engineers while the Kelani Ganga and the Malwatu Oya Basins are being handled by a Russian Team.

In addition to the work on these Multi-purpose Schemes, irrigation facilities will be provided under already committed schemes and new projects under: (1) Village Works, (2) Major Works and (3) Large-scale Development Works. These classes relate largely to the responsibility for the maintenance works of the irrigation facilities. In Village Works the maintenance will be undertaken by the cultivators themselves; in Major Works the maintenance will be carried out by the Irrigation Department and the cultivators will pay water rates, while the Large-scale Development Works are the large Colonization Schemes. These classes also bear some relation to the size and cost of the undertaking.

The programme of irrigation work forwarded to the Planning Secretariat by the Ministry of Lands and Land Development was for the period 1959-64. Since the Plan presented here lasts until 1968 the programme was extended to this date. This was done bearing in mind the need for an accelerated tempo of development in the later years of the Plan. Unfortunately the proposals of the Ministry of Lands and Land Development were forwarded at a very late stage in the preparation of this document, and there has been no time and opportunity to discuss with the Ministry the proposed programme. It is quite possible that as the programme gathers momentum those targets of acreage provided with irrigation will be exceeded.

TABLE VIII

The Irrigation Programme (1959–68)

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Total*
Total new acreage provided with irrigation ('000 acres)	21	23	30	34	38	42	45	51	54	62	400
Estimated cost (Rs. million)	39	40	57	63	70	79	85	98	104	123	758

This programme relates to the provision of irrigation facilities solely to previously unirrigated and uncultivated acreages. Some already cultivated land will incidentally be benefitted through this programme; this will allow such land to be cultivated more intensively and productively. But the extent so affected by this programme cannot be derived as the existing paddy lands which benefit vary with each scheme.

The irrigation programme outlined above is a comprehensive one which covers the four types of schemes mentioned earlier as well as the irrigated acreage on which it is proposed to grow sugar. The area reserved for sugar cane cultivation is 68,000 acres which is the extent required to make us self-supporting by 1968. The new irrigated area available for the cultivation of other crops, mainly paddy, would be 332,000 acres.

As a measure of comparison the acreage that has been provided with irrigation facilities over the last few years is given below :—

TABLE IX

New Area Provided with Irrigation (1954-7)

Year	*(Acres)*
1954	19,409(*a*)
1955	17,589(*a*)
1956	11,293(*b*)
1957	9,862(*b*)

(*a*) Includes new area provided with irrigation facilities in Gal Oya Scheme.

(*b*) Excludes new area provided with irrigation facilities in Gal Oya Scheme.

Source : Administration Report of the Director of Irrigation

When the acreages provided with irrigation facilities in the last 2 years under the Gal Oya Scheme are added, the total 'new' area provided with irrigation annually would be between 19-20,000 acres. The proposed programme commences not much above this figure but rises progressively over the 10 years until in 1968, 62,000 acres would be provided with irrigation. This is three times the area provided with irrigation in the first year of the Plan.

It must not be forgotten that the figures given above include not only the Gal Oya figures but also the acreage to be developed for sugar. To the extent that such areas are cleared and developed by an agency other than the Irrigation Department, the strain on that Department is reduced. Nevertheless even after some allowance is made for this, the programme will call for considerable effort on the part of all those concerned with irrigation and land development. The strain on the technical staff on the other hand will be eased to some extent due to the foreign assistance being received. Nevertheless the strength of the Ceylonese Technical staff is being built up. For example, one of the bottlenecks to an enhanced rate of development in the past was the lack of surveyors. This is now being remedied. In 1956 the strength of the Survey Department was 297, it is now over 500 and new recruits are being trained at the rate of 120 surveyors each year. The number of engineers in the Irrigation Department has also increased substantially. The requirements of technical staff of other types are being looked into and schemes for their training are being put into effect.

The figures of the cost given here are very tentative and indicate very broadly the investment required for the development with irrigation facilities of 400,000 acres. Due to the projection of the programme beyond that formulated by the Ministry it has not been possible to calculate the costs incurred on individual schemes in each of the different years and then total them up to derive the cost of the annual irrigation programme. That procedure would have taken account of the fact that expenditure and costs due to physical and constructional indivisibilities tend to be concentrated in certain years, especially in those when the construction of headworks takes place. The alternative adopted here is to base the total irrigation of the scheme on the acreage benefited. It is known that the total cost of a scheme bears a close relation to the area provided with irrigation facilities. Based on this fact the average cost of providing an acre with irrigation can be derived, depending on the type of scheme. For example, in a multi-purpose scheme the average cost of providing an acre with irrigation is around Rs. 2,500 including the cost of the headworks and channels. The same can be done for the other types of schemes too. The cost per acre of village works is around Rs. 500 per acre and on major works and large-scale development works the cost is between Rs. 1,400 and Rs. 1,600 per acre. The cost of the annual programme has been calculated on this basis. It is interesting to note that in the later years the area developed under Multi-purpose Schemes is expected to form a larger proportion of the annual programme than in the earlier years. There are two reasons for this. In the first place most of the ancient irrigation reservoirs would have been restored so that completely new works, largely of the Multipurpose type would be under construction. Secondly, in a Multi-purpose Scheme constructional activity is concentrated in a single area. Once the major dam or dams are completed, the provision of irrigation facilities to the individual fields proceeds rapidly. Since some of the Multi-purpose Schemes would be partly complete towards the middle of the plan period the irrigation programme in the later years tends to reflect this.

These figures relate only to the cost of providing irrigation. It therefore excludes the cost of buildings and roads on Irrigation Schemes as well as the cost of the mechanical equipment needed for the implementation of this programme. These are included elsewhere in the investment programme. In those schemes where some electricity is generated, a part of the total cost has been assigned to the electricity development programme and is included there.

LAND DEVELOPMENT AND SETTLEMENT ON COLONIZATION SCHEMES

After irrigation is provided the land is carved into peasant holdings and alienated to cultivators who are drawn either from the congested parts of the Wet Zone or from the landless villagers in the vicinity. The size of a single holding is now 5 acres comprising 3 acres of paddy land and 2 acres of highland. The usual practice is for the Government to develop to some extent the holding prior to handing it over to the colonist. The scale of such assistance has varied since the commencement of the policy of settlement. In the beginning the colonist was given an almost fully developed holding, carried out entirely at Government cost. This was done largely to popularize and establish on a sound footing the colonization policy. But now that the policy of colonization is well established and no difficulty is encountered in inducing people to migrate to the Dry Zone, in fact the demand for allotments far exceeds the supply, the scale of assistance has been modified.

This has been achieved by the system of advanced alienation in which the allottees are selected and brought into the scheme before the work on the individual holdings commences. Allottees are then made to engage in developmental work on the scheme such as jungle clearing. This new system has had many beneficial results. For one, the rate of alienation has risen as alienation was often held up because the bottleneck has sometimes been the delay in preparing the allotments in time. In addition, " the effect of bringing allottees into the scheme at an early date and having them participate in the work of development itself makes them more independent and self-reliant. The sense of possession of their allotment is increased when they themselves do the jungle clearing and other development works ". Some of the other advantages are that the land is cultivated with chena crops even prior to the provision of irrigation facilities which also provides some income to the allotee, and another is that it has been found that the channel construction work is completed more expeditiously and satisfactorily by the allottees working on it themselves than by entrusting it to contractors ; hence the land produces an irrigated crop all the quicker.

18—J. N. R 2359 (6/59.)

The cost of settling a colonist on an allotment under the system of advanced alienation is approximately Rs. 7,000. This is exclusive of the cost of providing irrigation. This cost covers the subsidies and direct assistance received by the colonist, the cost of his house and the proportionate cost of the civic amenities provided, such as of the school, post office, the internal roads and so forth. Of this amount the cost of the agricultural operations is approximately Rs. 1,800. The balance expenditure is incurred on the construction of houses and buildings, subsidies for non-capital works, &c. In this section only the purely agricultural cost of the settlement programme is estimated; the balance non-agricultural cost has been included in its appropriate section; thus the cost of housing is in the housing programme and that of roads in the programme for roads.

TABLE X

Programme and Cost of Settlement (1959–68)

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Total*
New acres provided with irrigation (excluding village works and area under sugar) ('000 acres)	15·5	16·5	18·0	20·4	23·6	28·0	33·5	40·0	46·4	56·7	298·6
No. of allotments ('000)	5·1	5·5	6·9	6·8	7·8	9·3	11·1	13·3	15·4	18·9	99.5
Cost of settlement at Rs. 1,800* per allotment (Rs. Million)	8·2	9 2	9·9	10·8	12·2	14·0	16·7	20·0	24·0	28·0	153·0

*Only the agricultural component of the cost.

The acreage provided with irrigation in the above table excludes the new irrigated area under village works and the land developed for sugar cane. In both these settlement will not be on a peasant allotment basis; in the case of village works because the neighbourhood is already settled and as regards the cane area the present plan is for its development on a plantation basis and not on a system of peasant farms. The number of allotments to be developed and alienated each year is a function of the new area irrigated as each allotment consists of 3 acres of irrigated paddy land. The land development costs are, however, generally incurred in the subsequent year as land development takes place after the irrigation facilities are provided. The above programme has sought to take this into account.

Altogether 99,500 families will be re-settled over the 10-year period. This includes those settled under the Gal Oya Scheme. The total number of people re-settled will, of course, be much more as the 99,500 refers only to the number of families. Since rural families are generally rather large the total numbers re-settled will be quite considerable. From the point of view of income and welfare these families will be substantially better off as they will be operating larger and more productive units than prior to re-settlement. This also means that the degree of underemployment among them, if not removed altogether, is at least reduced sharply.

In addition to the above programme which is concerned only with settlement on newly irrigated land, the Ministry of Lands and Land Development incurs additional expenditure on its Highland Colonization Schemes. This Scheme which has already commenced on a limited scale aims at re-settling people on unirrigated allotments which are cultivated both with export and other crops. In the period under consideration the rate of alienation under this Scheme will be quickened and allottees will be encouraged to grow crops such as coffee, vegetables, &c., in addition to those already grown. Over the 10-year period over 60,000 such allotments will be developed and provision has been made in the sum of Rs. 118 million to cover the agricultural cost of developing these allotments. Here again, the non-agricultural cost is excluded from this sector.

SUMMARY OF TOTAL INVESTMENT ON IRRIGATION AND LAND DEVELOPMENT

The total investment programme for irrigation, land development and settlement is given below :—

TABLE XI

Investment programme for irrigation land development and settlement (1959–68)

(Rs. Million)

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Total*
Cost of providing irrigation facilities	39	40	57	63	70	79	85	98	104	123	758
Land development on irrigation and highland colonization schemes	9	14	17	21	25	28	32	36	42	48	271
Forestry development	1	1	1	1	1	2	2	2	2	2	15
Miscellaneous land development schemes	2	3	3	4	5	5	5	6	7	8	49
Total	51	58	78	89	100	114	124	142	155	181	1,093

The Programme for the Individual Commodities

RICE

Since rice is the staple article of food in this country and is, in addition, the most widely grown peasant crop, the programme for expanding its output appropriately occupies the central place in this sector. In 1957 the domestic production of paddy amounted to 31,500,000 bushels valued at approximately Rs. 350 million. In addition 37,605,000 bushels of paddy (imported rice has been converted into its paddy equivalent) were imported to supplement local production. Altogether just under 70 million bushels of paddy were needed in 1957 to satisfy the local demand for rice. Local production thus met about 45 per cent. of the total requirements. By 1968 our requirements at constant consumption rates would have risen to 95 million bushels, and at the adjusted demand the requirements would be

103 million bushels. If this country is to be self-supporting in rice by 1968 domestic output would need to increase by an additional 64 million bushels at least or 72 million bushels if the adjusted figure is realised.

There are two methods whereby domestic production can be augmented. The first is by the extension of the cultivated acreage, and the other is through raising the yield per acre. A combination of them both will be employed in this instance. Of the two raising the yield has very definite advantages. It is much less expensive and a much quicker way of obtaining the added output than opening up new lands. This course is all the more practicable since the yield per acre in this country is relatively low. At the same time this country is in the fortunate position of still having unutilised land which can be brought into cultivation. Thus both these avenues are real possibilities in this country.

THE NEW LAND DEVELOPED FOR PADDY CULTIVATION

The earlier section on land development in the Dry Zone showed that over the 10-year period around 400,000 acres of land will be opened up and provided with irrigation. This, however, included the irrigated acreage of 68,000 acres which will be reserved for the cultivation of sugar cane. Hence the new area which will be developed for the cultivation of paddy would be 332,000 acres. Of this around 62,000 acres will be developed with irrigation facilities in the 10th year and accordingly no cultivation with paddy will be possible on this acreage in that year. Whilst it is true that under the system of advanced alienation the new settlers are brought well in advance of the completion of the scheme and that some cultivation is undertaken by them, the crops usually grown are chena crops. Hence if a realistic estimate of the extra output from the newly developed area is sought, this 62,000 acres should be deducted. This gives a net increase in the irrigated area of 270,000 acres which will be cultivated with paddy.

DOUBLE-CROPPING ON NEW LANDS

It has been the practice to attempt an irrigated Yala cultivation with paddy on the Dry Zone lands. This is a reflection of the peasants' deeply ingrained predilection for growing paddy whenever possible. The cultivation only of a part of the paddy tract is attempted in Yala but even this is very often doomed to failure. It is in Maha that cultivators can look forward to an adequate quantity of water for the cultivation of their fields with paddy. Reliable irrigation cannot be expected for a Yala cultivation as most tanks contain only the water that is left over from Maha. This attempt to double crop the land with paddy will in future be discouraged. "All irrigation schemes are theoretically being designed to issue 5 acre feet of water for Maha and 3 acre feet for Yala". Under the prevailing water utilisation rates this would be inadequate for a Yala cultivation with paddy but is quite adequate for growing subsidiary crops like Tobacco, Cotton, Chillies, &c., in rotation with paddy. This system of land and water utilisation has important repercussions on the programme for the development of many other crops. Under this pattern of land use self sufficiency in commodities such as Tobacco, Chillies and other subsidiary crops is assured. The success of this policy is largely dependent on the efficiency of the extension service. The agricultural extensions workers will need to demonstrate both the feasibility and profitability of growing these subsidary crops during Yala on their paddy land. Much of the farmers' resistance is associated with a feeling that paddy is a " safe " crop largely because they are familiar with its cultivation. It must be demonstrated quite clearly that in the context of the Dry Zone paddy during Yala is by no means a safe crop. In fact it is one of the riskiest enterprises possible. Hence, if no double cropping is possible or permitted through the regulation of the water duty, the additional crop area in 1968 would be the same as the additional land area provided with irrigation facilities—270,000 acres.

DOUBLE-CROPPING ON EXISTING LANDS

Apart from bringing into cultivation new land, the crop area can be increased by more extensive double cropping of existing paddy lands. The position in 1954-55 was that only 39 per cent. of the asweddumized area was doubled cropped.

Paddy Acreage, 1954–55

	Acres	*Per cent.*
Total asweddumized acreage, 1954/55	1,031,611	100
Area single cropped	544,230	53
Area double cropped	401,297	39
Area unsown in either season	86,084	8

86,000 acres were unsown throughout the year either due to a lack of water or because the land, although asweddumized in the past is in reality unsuited to continuous cultivation with paddy and is therefore sown only at intermittent intervals. The other possibility is to increase the area double-cropped. Of the asweddumized acreage in 1954-55 the area double-cropped was 401,297. The Agricultural Plan states that this could be increased by a further 250,000 acres, through " an effective system of repairs to and maintenance of existing irrigation works, both major and minor, and greater attention to minor irrigation works and flood control in already settled areas ". The statement quoted gives the clue to extending the area double-cropped. It depends on an adequate supply of water, whether through irrigation or rainfall. The provision of supplemental irrigation, the construction of minor irrigation schemes and the fact that most major schemes benefit some existing land would certainly permit the double-cropping of 250,000 acres of existing land which is only single cropped at present. The crop area in 1968 would thus be increased by 250,000 acres. Provision for improving irrigation facilities, especially under minor irrigation works has been included under investment for the expansion of paddy production. Over the 10 years Rs. 162 million has been allocated for the capital costs of all schemes to increase the yield of paddy.

REDUCTION OF THE AREA AFFECTED BY CROP FAILURE

Finally one other way of increasing the area harvested is through reducing the extent that suffers crop failure. Over the last 3 years only about 84 per cent. of the sown areas was harvested, the other 16 per cent. being lost for various reasons. This represents a loss at present yields of over 6 million bushels. The most serious cause of crop failure is the lack of water and the absence of controlled irrigation facilities. Some of the others are seed failure, flooding and agricultural pests. The programme has laid special emphasis on improving minor irrigation facilities, especially at the village level. Once these facilities are provided or improved, and also when the schemes for distributing pure line seed paddy and controlling the ravages of pests and diseases are implemented on a large scale, the area affected by crop failure would be halved. It is estimated that by 1968 only 8 per cent. of the sown area would fail to be harvested.

SCHEMES FOR INCREASING THE YIELD PER ACRE

The objective in the matter of raising the yield per acre is to increase the average yield throughout the Island to 48 bushels per acre. The yield is at present around 32 bushels an acre. The aim is therefore to raise the productivity of paddy land by 50 per cent., i.e., from 32 to 48 bushels in ten years at the most. The Agricultural Plan of the Ministry of Agriculture set an objective of the same absolute figure (48 bushels) but aimed at attaining it in 5 years time. If this is realised then there is every likelihood that by 1968 the average yield would be significantly higher than that postulated here. The output of paddy will be correspondingly greater. The increase in yield stipulated in this document should therefore be regarded as the absolute minimum that would prevail at the end of the decade.

(a) Fertiliser Usage

This increase in the yield per acre will obviously not occur spontaneously but will require the intensification or the commencement of various schemes designed to this end. The evidence is overwhelming that the application of chemical fertilisers will give large and immediate increases in the output of paddy. The present utilisation of fertiliser is much below the optimum applications recommended by Soil Chemist.

Utilisation of Paddy Fertiliser (1956-57)

1956	14,205 tons
1957	17,049 tons

It is reckoned that this quantity of fertiliser is sufficient to manure only about a third of the existing paddy acreage. Nevertheless the increase between the two years is a sign that the utilisation of paddy fertiliser is on the increase.

Of the paddy cultivators those in the Dry Zone have so far been the most reluctant to apply fertiliser. This is particularly unfortunate as under the major irrigation schemes two of the main factors limiting increased productivity—lack of water control and unfavourable soil conditions do not operate. Hence the use of fertiliser in these areas would result in a really significant increase in paddy yields. The Soil Chemist reports that on experiments on cultivators' fields under major irrigation schemes an average response of approximately 15 bushels per acre—virtually the entire increase in yield aimed at—may be expected on the application of 200 lb. of ammonium sulphate and 140 lb. of saphos phosphate. At these rates the minimum annual requirements for paddy lands cultivated in the Dry Zone at present are :—

30,000 tons of ammonium sulphate
21,400 tons of saphos phosphate

On the rest of the paddy area the application rates of fertiliser have been determined to be 150 lb. of ammonium sulphate and 100 lb. of saphos phosphate. At these rates a response of at least 10 bushels per acre is certain. The requirements of fertiliser at these application rates would amount to 50,000 tons of ammonium sulphate and 33,000 tons of saphos phosphate. The Island-wide requirements of paddy fertiliser for the present crop area would thus total :—

80,000 tons of ammonium sulphate
54,400 tons of saphos phosphate

The response of yield to the application of fertiliser, which has been obtained by experiments on the holdings of cultivators, shows quite conclusively that the use of fertiliser is one of the strategic factors in raising the yield. As an inducement to cultivators to apply fertiliser the Government has been operating a Paddy Fertiliser Subsidy Scheme for some time now ; under this scheme members of the C. A. P. & S. Societies obtain their manure at 2/3rds the cost. This Scheme will be amended and in the future fertiliser will be sold to cultivators at half the cost. The implications underlying this are first that it is the price factor that hinders to a large extent the increased use of fertiliser, and secondly that cultivators find it uneconomic to apply fertiliser, at the recommended rates, when sold at 2/3rds the cost while it is profitable when sold at half the cost. But it is not the price factor alone that prevents cultivators from applying fertiliser. There have been occasions when fertiliser has been available neither at the required time nor at convenient retail points. Both these influence the use of fertiliser quite substantially. Steps are being taken to remedy this so that in the future cultivators will be able to obtain their requirements easily, expeditiously, and at the correct time.

(b) *Liming*

In some paddy growing areas, especially in the low country, the response to paddy fertiliser is not marked. This is due to the operation of certain other limiting factors such as poor drainage, and acidity. The Chemist has conducted experiments which prove that acidity is corrected by applying about 6 tons of lime per acre. The response to this is of the order of 10 bushels per acre and the beneficial effects of a single liming will last for at least 5 years. It is estimated that around 200,000 acres of paddy land are affected by acidity. The cost of liming, however, is high, working out to Rs. 500 per acre. As the increase in yields is of the order of 10 bushels per acre and its effects continue for 5 years, the total value of the increase at Rs. 12 a bushel is Rs. 600. Cultivators may not be attracted by this unless of course double cropping is possible. In the case of these lands lime will be regarded as an alternative to artifical fertiliser and will be subsidised in the same way.

(c) *Mapping of rice soils*

It is obvious that an essential pre-requisite for such intensive fertiliser use is the mapping of rice soils for fertiliser response. This would reveal the limiting factors to yield increases in the various districts. This information associated with the fertiliser needs and response of the different soils will enable corrective measures to be taken as well as lead to the most economical use of the appropriate fertiliser. Exploiting paddy lands on a rational basis will thus be possible. This scheme of mapping rice soils has already commenced. A tentative map will be ready by 1960 and the final one by 1963.

(d) *High Yielding Strains*

The full benefits of intensive fertiliser application cannot be reaped unless both high-yielding and disease resistant varieties are used. The botanist of the Department of Agriculture has established that the difference in fertiliser response between the recommended pure lines for an area and the local varieties can be as high as 50 per cent. In addition, intensive applications of fertilisers on indigeneous varieties tend to aggravate pests and diseases. If the full benefits of the fertiliser programme are to be realised, the use of pure line seed should be insisted on. A scheme is already in existence to multiply pure line seed paddy in approved seed farms as well as on Departmental Farms. The yaya scheme of seed multiplication was begun in Maha 1957-58 and has proved successful. In the future it is proposed to provide suitable pure lines to cultivators once in four years. A premium of Rs. 2 per bushel is paid for all seed paddy that passes the Department's germination and purity tests. In Maha 1957-58 6,600 acres were cultivated with pureline seed paddy. This will be increased progressively until cultivators will be in a position to obtain all their requirements of good pure line seed paddy.

(*e*) *Improved Cultivation Techniques*

The widespread adoption by cultivators of improved cultivation techniques is another method whereby the average yield will be raised. In this connection it is fruitful to compare the average yields throughout the Island with those obtained in Kegalle over the last few years.

	All Island average	*Average Yield in Kegalle*
Maha 1954/55	32·15 bushels	42·15 bushels
Maha 1955/56	30·85 ,,	47·05 ,,
Maha 1956/57	32·69 ,,	58·15 ,,

In each Maha season the average yield in Kegalle is significantly higher than the national average. The causes for this spectacular increase in yield in Kegalle are not difficult to unearth. In every Maha season this district has led all the others into putting into practice the improved cultivation techniques such as manuring, transplanting, weeding, &c. The paddy lands in that district are being cultivated in a really intensive manner. It would be well worth the effort if a study is made to find out the reasons for the success of the extension work in this district. But it certainly proves that the stipulated increase in yield to 48 bushels is well within our reach.

A concerted drive will be made in this period to induce cultivators to adopt improved cultural practices. Deep ploughing, ploughing under of weeds and stubble, transplanting or row seeding, weeding, the Japanese methods and all the other operations which must be adopted to produce the best conditions for the growth of the rice plant and raise yields will be further popularised among cultivators. Success in this sphere is largely bound with an efficient extension service. The extension service of the Department of Agriculture has been reorganised and strengthened. This has also been accompanied by changes in attitudes and extension methods which are designed to educate cultivators and stimulate them to adopt improved techniques. It has long been known that these improved practices raise the yield quite substantially but the efforts to induce cultivators to accept them have proved somewhat disappointing. However, once the cultivators' resistance to change is overcome, the new techniques are adopted at an even accelerating rate. There is little doubt that we are about to enter this phase of the "breakthrough" especially after the recent reforms in tenurial conditions. It is certain that the next ten years reforms in tenurial conditions. It is certain that the next ten years will bring about a really rapid rate of acceptance of these techniques by cultivators.

(f) The Guaranteed Price Scheme

Another scheme which was designed to furnish "the best possible incentive to the increased production of food crops and thereby reduce the country's dependence on imported supplies" is the Guaranteed Price Scheme. An equally important aim was to shield the cultivators from wide fluctuations in the price of paddy and hence to reduce his income instability. The price guarantee has taken the form of a fixed price paid to all farmers for the entire amount offered for sale to the Government. In recent years the quantity purchased by the Government has increased substantially.

TABLE XII

Paddy Purchases under the G.P.S (1953–57)

Year	*Total production ('000 bushels)*	*Purchases under G.P.S. ('000 bushels)*	*Per cent*
1953	21,900	332	1·5
1954	31,100	3,615	12
1955	35,500	13,405	38
1956	26,900	9,728	36
1957	31,549	13,111*	42

*This is based on purchases of paddy under the G.P.S. as given in the Statistical Abstract by the Commissioner of Agrarian Services. This differs from that given by the Commissioner of Food Supplies in his Administration Report.

Since producers are not compelled to sell their paddy to the Government, a free market for domestically produced rice has arisen. As long as the guaranteed price was below the free market price, the purchases under the GPS were relatively small. On the other hand as soon as the market price dropped below Rs. 12 a relatively large proportion of local production has been sold to the Government.

The import price in 1957 of a bushel of paddy (imported rice has been converted into its paddy equivalent) was Rs. 6.77. The difference between Rs. 12 which is the price under the GPS and Rs. 6.77 which is the price at which imported paddy can be purchased is the measure of the incentive held out to local producers under this scheme to expand production. Since producers sold 13,110,000 bushels under the GPS in 1957, their 'incentive' incomes, so to speak, was over Rs. 68 million.[1]

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[1] This is based on purchases of paddy under the G. P. S. as given in the Statistical Abstract by the Commissioner of Agrarian Services. This differs from that given by the Commissioner of Food Supplies in his Administration Report.

A transfer payment of this magnitude offered as an incentive to increased production imposes an obligation on paddy producers to spare no effort to maximise their output. If the guaranteed price is serving its purpose, it would be reflected first in the area sown as well as in output.

Year	*Guaranteed Price–Rs. per bushel*	*Area sown ('000 acres)*	*Production ('000 bushels)*	*Yield per acre Maha*	*Yield per acre Yala*
1952	9·8*	1,078	29,900	31	31
1953	12	1,163	21,900	30	28
1954	12	1,308	31,100	32	30
1955	12	1,345	35,500	31	33
1956	12	1,134	26,900	33	28

*Raised from Rs. 9 to Rs. 12 in September.

The area sown fluctuates quite considerably although it does show an upward trend. If allowance is made however, for the new land that has been developed during this period and the increased double cropping through the improvement to irrigation facilities, the real increase in the asweddumized acreage would be somewhat reduced. It is at the same time dangerous to try to associate production or the yield per acre closely with the guaranteed price, as price is only one of the factors that influence them. Weather conditions are, for example, an extremely potent factor in determining not only production and the yield but also the gross area sown. Nevertheless, the increase in the yield per acre can hardly be termed spectacular.

A possible explanation for the sown area remaining fairly constant is that, apart from the areas newly developed and those still awaiting development in the Dry Zone, the entire area cultivable with paddy is being sown, other conditions permitting. In other words, the physical limit of cultivation elsewhere has almost been reached, and it is not possible to move the extensive margin very much further. This explanation is further reinforced by the fact that even after the alteration of the guaranteed price from Rs. 8 to Rs. 9 and then to Rs. 12, the area sown has not displayed a permanent and significant change. It is therefore interesting to speculate whether, if a revision of price downwards is made, the area sown and production would diminish. Paddy production is carried on largely by subsistence peasant farmers, who produce the crop primarily for their own needs. It is only the surplus that is marketed. Since the satisfaction of their own requirements is the paramount need the area sown is unlikely to be influenced overmuch by the market price. Market price, on the other hand, is more likely to influence the portion of the crop that is marketed. If this explanation that price is only a subsidiary factor in the production decision is valid the area sown is unlikely to fall if a slight reduction in the guaranteed price is made.

The alternative open to producers if the area sown cannot be increased, is to intensify production through raising the yield. It can hardly be maintained that the yield per acre cannot be increased from its present level. But even here the results are disappointing, especially in view of the "incentive" price producers receive. The same interpretation hazarded earlier that paddy producers are subsistence farmers more interested in meeting their needs than producing for the market could equally well explain this phenomenon too. The logical conclusion in that case would be that the subsidy received by paddy producers through the guaranteed price is not serving as a major incentive to increased production. The purpose it really serves at present is to maintain the incomes of the paddy producers at artificially high levels at the expense of the community as a whole.

A reconsideration of the whole Scheme should accordingly be undertaken forthwith to enable it to fulfil its primary function of serving as an incentive to increased production. If this is not done it will continue to impose a heavy burden on Government finances. In fact if the same proportion of the crop as in 1957 is sold to the Government in 1968 the "subsidy" will rise to over Rs. 169 million. This is likely to be the minimum level of the producer subsidy as with the intensification of production cultivators will sell a greater proportion of output keeping a smaller proportion than at present for their own consumption. Moreover, there is the other aspect of the alternative uses to which these resources can be put ; in a capital scarce country there cannot but fail to be many more productive or profitable ways of using these resources. This Scheme should therefore be redesigned and modified in such a way that it will act not only as an income stabilizer as at present but also as a positive incentive and spur to expand, not just to maintain, output. A concious and consistent price is necessary to guide production to planned targets.

OUTPUT OF PADDY IN 1968

Drawing together all these strands, it is now possible to assess the output of paddy in 1968. The area sown in 1957 was 1,206,000 acres. To this should be added the acreage developed in 1958 since the base year for the calculation has been 1957, and the plan period is 1959-1968. The acreage developed for paddy in 1958 has been provisionally estimated at 18,000 acres. The area cultivated with paddy prior to the commencement of the plan period is thus 1,224,000 acres. The new land developed for paddy cultivation between 1959-1968 will be approximately 332,000 acres. From this the 62,000 acres which will be developed in the last year is deducted as this area will not contribute to output in the same year. The net new area developed will thus be 270,000 acres. Since no double cropping will be possible due to the regulation of irrigation water, the total area sown will be unaltered. Finally, the sown area would be augmented by the additional 250,000 acres which is single-cropped at present but which will be double-cropped by 1968. The total sown area in 1968 would thus be :—

TABLE XIII

Sown area in 1968

Area sown in 1957	1,206,000
Area developed in 1958	18,000
Net area developed 1959–68	270,000
Additional area double-cropped	250,000
Total Sown area	1,744,000

The area that would be actually harvested would be less than the sown area by the extent that suffers crop failure. At present around 16 per cent. of the sown area suffers crop failure. By 1968 due to superior water control, elimination of pests and diseases the proportion of the area on which crop failure occurs will be halved. On this basis the sown area of 1,744,000 acres should result in a harvested area of approximately 1,604,000 acres. At an average yield of 48 bushels an acre the output of paddy would be 76,922 million bushels. Its value calculated at present average prices will be Rs. 857 million. Local production would have increased by 144 per cent. over the present. This substantial increase in local production is to a large extent a result of raising the average yield per acre to 48 bushels.

The adjusted consumption requirements in 1968 were 103 million bushels. Local production at 77 million bushels would thus meet 75 per cent. of our requirements. The balance 26 million bushels will need to be imported. The cost at 1957 import prices would be approximately Rs. 178 million. By 1968 the proportion of our requirements met from imports would be only 25 per cent. in contrast to the 51 per cent. at present. Since the programme presented here may conceivably be exceeded both in respect of the new area developed and the yield per acre, and from this point of view is only the minimum programme, even this quantum of imports may be reduced with a possibility that none may be required at all.

SUGAR CANE

The growing of sugar cane for crushing into sugar has not been undertaken until now on a commercial scale. It is a crop that is fairly well suited to relatively small scale, even peasant farming. It is at the same time a labour intensive crop. In addition, from a national point of view cultivation of the land with sugar yields a much higher return than with paddy. All these advantages favour the cultivation of sugar cane especially in the Dry Zone where there are considerable extents suitable for it from the point of view of soil and climate. The absence of a sugar cane industry may be explained largely by the bias towards paddy production both in official policy and also by cultivators whose first preference has always been to grow paddy which is their staple food crop. Some of the other obstacles were the lack of crushing and refining facilities without which growing cane is pointless as well as the relatively low and fluctuating import price of sugar which would have meant that the local industry, if it was to be established successfully, would have had to be shielded by means of tariffs. Earlier such tariff protection was generally regarded with disfavour on the grounds that it impeded the international division and specialization of production. Since none of these obstacles are really insurmountable, the Government has decided to lead the way in establishing this industry to make the country self-sufficient in sugar.

To assess the prospects for self-sufficiency in 1968 it is first necessary to estimate our requirements at that time. In the case of sugar, however, basing the calculation of our requirements in 1968 solely on the 1957 imports would be erroneous because in 1957 the quantity of sugar imported was the lowest since 1953.

TABLE XIV

Sugar Imports (1953–7)

Year	*Quantity ('000 tons)*	*Value (Rs. '000)*	*Average Price per ton*
1953	142	69,548	490
1954	132	57,826	438
1955	141	62,687	445
1956	189	95,167	504
1957	129	84,716	657

It will be observed that in 1957 the average price per ton rose quite steeply. What has taken place is that when sugar prices started climbing in 1956, extra large quantities were purchased and added to stocks in anticipation of a continued price rise. In 1957 imports were sharply curtailed, and stocks were run down to normal levels to compensate for the lower imports. Accordingly, to estimate our requirements in 1968 on the imports of 1957 would give a totally false picture of our real needs. The demand in 1968 has, therefore, been derived by projecting to 1968 the smoothened trend line of our sugar imports between 1943 and 1958. On this basis the estimated requirements of sugar amounts to 272,000 tons in 1968.

Recent experiments have shown that an acre under cane when grown on a commercial scale would yield about 40 tons of cane or 4 tons of sugar at a recovery of 10 per cent. At this yield 68,000 acres of sugar cane should be harvested in 1968 if our entire requirements are to be met from domestic production. Cane will be grown in a 4 year rotation in which three-fourths of the total area will be under plant cane and first and second ratoons, while the balance one-fourth will be cultivated with rice.

The whole of this acreage will be situated in the Dry Zone where cane will be grown under irrigated conditions. It will therefore compete very directly with rice. Between these two competing uses preference should be given to growing sugar cane for apart from the fact that " for the same amount of irrigation water cane produces nearly three times as much food as rice ", the national gross return from an acre of cane will generally be higher than from an acre of paddy. The gross return from an acre of cane is expected to be around Rs. 1,000. To be equally advantageous an acre under paddy should yield nearly 150 bushels at the 1957 import price or over 80 bushels at the internal guaranteed price of Rs. 12.

Two schemes for growing cane have already been commenced ; one is at Kantalai and the other at Gal Oya. The Kantalai project is divided into two stages. The first stage which has already commenced envisages the development of 6,400 acres altogether ; since cane and rice will be grown in a 4 year rotation, 4,800 acres will on completion of this stage carry sugar and 1,600 acres will be under rice. The planting of cane on the first lot of 1,600 acres has already taken place and the next two lots of 1,600 acres each will be planted in this year and the following year. By 1960 the plantings with cane on the full 4,800 acres would have been completed. It will be ready for harvesting and crushing by 1961. The output from Kantalai Stage I would amount to 19,200 tons of sugar. The Gal Oya sugar project is designed to cultivate 10,000 acres with cane ; this scheme too has already commenced with an initial planting of 1,000 acres and will be extended in stages until the full 10,000 acres would have been planted by 1964. The total output from the Gal Oya Scheme will then be 40,000 tons.

In both schemes an eventual overall average yield of 4 tons of sugar per harvested acre is anticipated. But in the first few years the average yield per harvested acre is below this as the yield of successive ratoon crops is lower than from plant cane. In the later years, however, this is compensated for by higher yields once the problems of growing cane on a commercial scale are successfully overcome. The output from these two schemes together in 1965 would accordingly amount to 59,200 tons ; this will meet around 22 per cent. of our requirements in 1968.

Once the Kantalai Stage I has been completed, work will be commenced on Stage II. A further 15,000 acres irrigated by the Kantalai tank will be cultivated with sugar. The first 5,000 acres are scheduled to be planted in 1961 and the full 15,000 by 1963. The final project for growing cane, which is still in the planning stage is located at Walawe. Here too as in Kantalai the project is in two stages, each stage comprising 9,000 acres or 18,000 acres altogether. The first planting of 3,000 acres is scheduled to take place in 1960 but there is a possibility that it will be delayed for one year largely because the factory may not be ready for crushing in 1961. The scheme aims at planting an additional 3,000 acres each year until the full 18,000 is completed. For the present the average yield of sugar from an acre under the Walawe Scheme is tentatively set at 3.5 tons, and not at 4 tons per acre as in the case of the others. This is purely because all the tests and research to determine the yield have not been completed. The preliminary results, however, hold out the hope that this Scheme will certainly yield as much, with a strong probability that the yield will be even greater, than the others.

TABLE XV

Area Planted with Cane and Output of Sugar from Kantalai I and Gal Oya Schemes (Acres) (1958–68)

	1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Area planted	2,600	5,700	9,800	12,300	13,800	13,800	14,800	14,800	14,800	14,800	14,800
Area harvested	—	2,600	5,700	9,800	12,300	13,800	13,800	14,800	14,800	14,800	14,800
Output (tons) of sugar	—	9,600	20,400	34,400	46,000	53,500	55,200	59,200	59,200	59,200	59,200

TABLE XVI

Area Planted with Cane and Output of Sugar from Kantalai II and Walawe I and II (1951–68)

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Area planted (acres) :										
Kantalai II	—	—	5,000	10,000	15,000	15 000	15,000	15,000	15,000	15,000
Walawe I	—	—	3,000	6,000	9,000	9,000	9,000	9,000	9,000	9,000
Walawe II	—	—	—	—	—	3,000	6,000	9,000	9,000	9,000
TOTAL	—	—	8,000	16,000	24,000	27,000	30,000	33,000	33,000	33,000
Area harvested	—		—	8,000	16,000	24,000	27,000	30,000	33,000	33,000
Output (tons of sugar)*	—	—	—	28,000	53,500	76,500	102,000	112,500	123,000	123,000

*Yield from Walawe Acreage calculated at 3·5 tons sugar per acre.

How far will these schemes take us towards self-sufficiency ? Our estimated requirements over the 10-year period are given below together with the output from all the above schemes.

TABLE XVII

Annual Requirements and Local Sugar Production (1959–68)

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Estimated requirements ('000) tons	185	193	202	211	220	230	240	250	261	272
Local production ('000) tons	10	20	34	74	107	132	161	172	182	182
Degree of self-sufficiency per cent.	5	10	17	35	49	51	67	69	69	67

It will be observed that we become increasingly self-sufficient until 1966 at which time domestic production would be adequate for around 69 per cent. of our requirements. In 1966 and 1967 we maintain the same degree of self-sufficiency but by 1968 we start to slide back again when our sugar output meets only 67 per cent. of our requirements. It was argued earlier that for many reasons utilizing the land to grow cane is preferable to growing paddy, provided, of course, that the soil and climatic conditions are not opposed to it. It is therefore planned to develop the additional area needed to make us self-sufficient in sugar by 1968. For this a further 20-22,000 acres yielding 4 tons of sugar per acre are required. Land is not likely to limit this programme for the Agricultural Plan states "striking potentialities for sugar growing under lift irrigation from the Mahaweli exist". The research and investigations into this will be commenced forthwith since if we are to be self-sufficient by 1968 in sugar, the land developed under this scheme should be in cane at the latest by 1967.

The capital cost of this programme has been tentatively calculated on the basis that the cost of developing an acre of land for sugar cane will be approximately Rs. 2,250. This is in line with the average cost on the larger irrigation schemes under which the land for cane will be developed.

TABLE XVIII

Investment Costs Sugar Cane Lands (1959-68)

	1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Total*
Acreage to be developed under committed schemes	3,000	4,000	10,500	9,500	8,000	4,000	3,000	3,000	—	—	45,000
Acreage to be developed under un-committed schemes	—	—	—	1,000	3,000	7,000	5,000	4,000	3,000	—	23,000
Total (acres)	3,000	4,000	10,500	10,500	11,000	11,000	8,000	7,000	3,000	—	68,000
Cost of development Rs. million	7	9	23	24	25	25	18	16	7	—	153

It will be observed that in 1961 the area to be developed under the committed schemes is 10,500 acres after which the area developed annually dwindles. The suggested phasing of the uncommitted schemes has sought to maintain the area developed annually at around the figure of 10-11,000 acres for the succeeding few years too. Hence it is only in 1965 that the acreage developed commences to diminish. The programme comes to an end so far as this plan period is concerned in 1967. The total cost of the programme is Rs. 153 million. This excludes the capital cost of the refining and processing facilities which are considered in the section on Industries.

Finally, the establishment of a sugar industry whether on a plantation basis or by peasants will provide employment to a fairly substantial number. It is reckoned that two acres of sugar will provide full time employment for one man. This excludes harvesting which is entirely seasonal, and which requires additional labour. On this basis the 68,000 acres under cane will provide full time employment to 34,000 persons. Also left out of reckoning are the considerable numbers of people who will be employed in the crushing and refining of the cane as well as in the production of the numerous subsidiary products such as hardboard, paper, power, alcohol and so on which are founded ultimately on the growing of cane. When all these are added together, the establishment of sugar cane cultivation would make a substantial contribution to reducing the severity of unemployment in the economy.

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It would be worth investigating whether peasant farmers cannot be induced to grow cane on their holdings too. All the schemes discussed earlier envisage sugar cane cultivation on a large-scale plantation basis. Nevertheless cane is grown in many parts of the world by small farmers on family sized farms. Crushing and refining is, of course, almost invariably done in big enterprises. Growing cane should prove an attractive enterprise to peasants, both because it is a cash crop and because the pattern of rotation permits the growing of a rice crop to which peasants are traditionally wedded and which with intensive cultivation methods should meet their own consumption requirements. One other factor which should weigh heavily in favour of cane is that cane would not be so disastrously affected by drought as rice. In the case of rice the absence of water can ruin the entire crop irretrievably and utterly, while with cane though the crop is affected, it is not ruined. In the Dry Zone where the rainfall is variable and where the risk of drought is never far away, producer income may be stabilized to some extent through the cultivation of cane. Furthermore, cane farming demands almost constant work which would tend to alleviate the degree of under-employment in such areas.

It is suggested that an Agricultural Research Station be established which will concentrate on problems of cane cultivation. It is well known that the cultivation of cane can be easily imperilled by pests and diseases. Moreover, a constant supply of disease free and high yielding cane seedlings is required for planting. If, in addition, sugar cane cultivation is undertaken by peasants, a really efficient and expert extension service will be needed to ensure that the highest standards of cultivation prevail on such holdings. These alone would be sufficient justification for a fully equipped Sugar Cane Research Station.

The industrial aspects of cane crushing and refining are considered in the section on Industries.

ANIMAL HUSBANDRY

MILK

A major field of agricultural development in the future will be animal husbandry. Despite our land resources in which soil and climate are quite well adapted for pasture and livestock, almost Rs. 60 million was spent in 1957 on the import of milk and milk products. By 1968 this would have increased to nearly Rs. 100 million unless measures for the development of this industry are put into effect straightaway.

Planning for this industry is handicapped due to the lack of reliable and accurate statistics. According to the available estimates there were in 1957 about 1½ million head of neat cattle and 700,000 buffaloes. The number of neat cows in milk was 257,000 producing 121 million pints of milk, while 81,000 buffalo cows added a further 32 million pints to the local milk supply. Local production of milk amounted to 153 million pints from 338,000 cows which gives an average annual production of 433 pints per cow or a daily yield of 1.2 pints per animal. This is, of course, in addition to the quantity consumed by the calves which are invariably suckled.

The low yield of the average cow fed on poor pasture tends to make milk production uneconomic. The average yield hardly justifies the feeding of concentrates and any increase in the price of milk to make milk production profitable puts milk out of reach of the average consumer. There is consequently a great demand for imported milk. The solution must ultimately lie in the improvement of cattle population, the improvement of pastures, better standards of concentrate feeding and improved management, all of which are long-term projects.

In addition to the milk produced locally, the equivalent of 206 million pints of milk was imported in the form of milk and milk products. (All milk products have been converted into its fresh milk equivalent). The total intake of milk in 1957 was of the order of 359 million pints. This gives an average consumption of 38 pints of milk per person per year. If consumption at this level is maintained in 1968 the requirements of fresh milk would have increased to 495 million pints. At the adjusted consumption rate the requirements would be around 538 million pints. The objective in milk production is to expand domestic output to meet our minimum requirements of 495 million pints by 1968. The difference between this and the adjusted requirement of 538 million pints—43 million pints—will be imported. This will probably take the form of butter, cheese and cream for which there will be a demand that can hardly be met from internal production.

The postulated increase in local production will be obtained both by an increase in the average yield of a milk cow, and also by an increase in the number milked. In this period considerable emphasis will be placed on increasing the average yield. The present net yield of 1.2 pints per animal per day is so low that an increase is quite feasible. At the end of the 10-year period it is planned to raise the yield to 3.2 pints per animal per day or 1,100 pints a year. This is a relatively modest target since the Department of Agriculture is of the opinion that " a cow can be made to yield 5 pints of milk a day ". This may be regarded as the long-term potentiality of local cows while the yield stipulated here of 3.2 pints is the minimum target yield set for 1968. In fact, unless the yield is at least of this magnitude, it is doubtful whether animal husbandry and milk production would prove profitable.

The production target in 1968, as previously calculated, was 495 million pints. At the enhanced yield of 1,100 pints per cow, 450,000 cows altogether should be in milk throughout the year in 1968. As there are already 338,000 cows being milked, only a further 112,000 cows need to be milked to reach the production objective. The underlying assumption is that the increase in the yield per cow would apply to a similar number of animals as are being milked now so that their production would move from the present 153 million pints to 372 million pints.

Self-sufficiency in milk thus depends on achieving two things. The first is to raise the average annual yield per cow from 433 pints to 1,100 pints, and secondly to ensure that 112,000 cows more are milked. To the extent that one falls short of the target the other has to be increased; thus if the yield does not rise to 1,100 pints, the number of cows in milk has to be greater. Similarly if one target is exceeded, the other can be diminished.

The feasibility of raising the long term average yield of the animals in milk hinges on grading up the local nondescript cattle and on correct feeding. The present low yield is largely the reflection of inadequate and poor feeding. There are two aspects to the problems of improved feeding; on the one hand the providision of bulky foods such as fodder, grass and pasture and on the other the provision of concentrates.

Grass is without doubt the cheapest food for livestock. So far the development of the country's grassland has not been undertaken in an organized fashion largely because grass has not been recognized as an agricultural crop demanding its own individual management techniques and skills. This attitude has certainly to be changed if animal husbandry is to flourish.

The potential grasslands in this country can be classified into—

(a) The Wet Zone

In this area the real limiting factor is land as almost all the cultivable land is already planted with the export crops, largely tea. The only readily available land is in areas unsuitable for tea and, of course, the dry patana lands. A windbelt and pasture scheme has already been laid down at two upcountry centres to develop the patana land with suitable species of grasses. If these experiments prove successful, around 5-10,000 acres of dry patana land will be developed with pasture.

Owners of private land will be encouraged to improve their present pasture lands as these areas, due to its climate conditions, can support the animals all the year round " as against the bimodal pattern of grass production in the Dry Zone ". Assistance will be provided by the Department of Agriculture both in the form of improved pasture types and other planting material as well as technical advice on the proper maintenance and utilization of the pasture.

(b) *The Semi-Arid Zone*

The Department of Agriculture has classified under this heading the land under coconuts. The 1 million acres under this crop is potentially a source of milk. A certain number of coconut estates have already started dairy enterprises to meet the requirements of the Estates Food Production Act.

Whilst there is every likelihood that an increasing number of coconut estates will take to dairying, especially as a result of the expanding activities of the Milk Board, certain basic problems in combining the two enterprises still await solution. The fundamental problem is how grass is to be grown without affecting the yield of the coconut. This is essentially a matter of conserving soil moisture and preventing competition for the available moisture during periods of drought which have so marked an adverse effect on the yield of the palms. A further problem is the conservation of fodder to cattle through dry spells. Research into these problems has been initiated by the Coconut Research Institute, and its recommendations will be available in the near future. In the meantime the Department of Agriculture is seeking to popularise pasture cultivation on coconut estates through the issue of improved planting material such as *bracharia brizantha.* The yield of animals maintained on these estates will be increased thereby.

It must however be borne in mind that estates constitute only one third of the total acreage so that a considerable share of the responsibility of developing the coconut land with pasture devolves on small-holders. Considerable extension work on pasture establishment and management will be required if small-holders are to succeed in this enterprise. But it is not an impossible task, especially as small-holders are prone to imitate the practices on neighbouring estates. Moreover, the regular cash income from milk is an useful incentive, particularly to small-holders.

It is worth remembering that almost the entire herd of cows being milked at present is already maintained in the Wet Zone and the Semi-Arid Zone. The low yield per cow is a consequence of the poor pasture now available. The development of these two zones with pasture on the lines indicated above will lead both to an increase in the yield per cow and also an increase in the carrying capacity of the land. When looked at from this angle, the stipulated increase in yield to 3.2 pints is well within reach.

(c) *The Dry Zone*

This area undoubtedly offers the best prospects for the future development of grass land and animal husbandry. The research carried out at Maha Illuppallama indicate that a considerable portion of the land estimated at 1.8 million acres is ideally suited for unirrigated pasture cultivation. The Department of Agriculture is of the opinion that this land when fully developed with high quality pasture can provide enough grass to carry one animal per acre.

The development of the Dry Zone land with pasture would encounter many more problems than elsewhere. First, the land has to be opened up and cleared. After this the pasture has to be established ; since pasture in the Dry Zone is a new "crop" the techniques of establishing, maintaining and exploiting it on a large scale would have to be evolved. All these factors would tend to curtail the area on which pasture can be established in the 10-year period. Under the circumstances not more than 200,000 acres are likely to be developed with pasture.

On the basis of one animal per acre the size of the total herd which could be carried on the developed pasture land would be around 200,000 animals, including followers, bulls, and cows not in milk, while around 80,000 cows will be in milk. It was shewn earlier that self-sufficiency, at our minimum requirements, entails, apart from raising the average yield, an additional 112,000 cows in milk. Of this number approximately 80,000 would be in the Dry Zone, leaving a balance of 32,000 to be brought up and maintained in the rest of the Island.

The complicated problems that arise in developing pasture in the Dry Zone should not be minimised. "Pasture management and production require disciplines of cultivation as high as for most other crops". A high level of technical skill is essential. There are, moreover, associated problems such as rotational grazing, and the making of silage for feeding during the period of low herbage production, &c. The Department of Agriculture through its advisory and extension service will demonstrate the correct methods of establishing and exploiting these pasture lands. Cultivators will also receive assistance in the form of planting material and other requisites for pasture establishment.

The other facet to feeding which is related directly to raising the average yield is that of concentrates. The Department of Agriculture considers that "3 lb. of concentrate feed is necessary per animal per day". At this rate the 438,000 cows being milked in 1968 will require approximately 215,000 tons of concentrates. The output of coconut poonac, which is the major locally produced concentrate, varies between 50,000 to 75,000 tons per annum. When the scheme of development proposed for the Coconut Industry is implemented, this will be augmented by another 25,000 tons. The maximum quantity of coconut poonac would therefore approximate a 100,000 tons.

There are, of course, other feeding stuffs which could be included in the concentrates ration. If all paddy milled is put through cone type mills which produce good quality rice bran, this bran will be of considerable value in feeding, and with the increased production of paddy envisaged here should make a substantial contribution to the concentrates needed. Gingelly poonac is likely to be available in increasing quantities as well as molasses which is a by-product of the new sugar mills. Increased production of maize and sorghum would also result from the development of the Dry Zone. Nevertheless, there is a possibility that in spite of an augmented supply of these items a shortage of animal feeding stuffs may occur. If this shortage develops, imports of concentrates will be necessary to prevent the livestock industry from suffering a serious set-back. An alternative would be to obtain on easy terms coarse grains for animal feeding-stuffs from grain surplus countries. With a supply of such grains the pressure for the speedy development of pasture land could also be eased as animals can virtually be stall fed. If a scheme for the import of these grains is formulated, the production targets set for dairy and poultry products will be reached all the quicker.

The other condition to be fulfilled for self-sufficiency is that by 1968 an additional 112,000 cows should be milked. It is well known that at present a considerable number of cows are not milked for various reasons. The memorandum of the Department of Agriculture for example, states " 294,000 buffalo cows are not being milked. Under organised management it should be possible to obtain immediate returns from this stock ". This applies as much to neat cattle. The reasons for this are many. One of the most potent is the lack of well organised purchasing centres throughout the country. When the Milk Board operates on an Island wide scale, there is no doubt that many will either commence or expand production. This contention is borne out by the continued expansion in the sale of milk to the Milk Board in those districts where collecting centres have been established. In the investment programme, provision in the sum of Rs. 31 million has been made to cover the capital cost of extending the activities of the Milk Board on an island-wide scale.

Certain other measures will also contribute materially to achieve the same end. For example, many cows are not in milk at present because they have not been served. A survey of animals in the Thamankaduwa District revealed that a considerable proportion of the cows had not been served. As the Department's scheme for the exchange and sale of bull calves expands, the proportion of unserved cows will decline. Similarly the establishment of an increasing number of artificial insemination centres will result in an increase in the number of cows in milk. The consequence of both these projects will be the grading up of the rather poor stock we have at present. Grading up of local stock, both neat cattle and buffaloes, either to European breeds or to heavier Indian breeds, depending upon location and elevation, is a fairly long drawn out process, extending to about 20-25 years ; this period could, however, be shortened to some extent by a more intensive use of Artificial Insemination techniques. Once grading up has made reasonable progress both the milk as well as the meat supply from domestic sources will be considerably augmented. It is naturally essential if the entire programme of grading up is not to be jeopardised that all scrub male animals, especially in villages, be compulsorily castrated.

There are many other practices and techniques which will be popularised to increase the number of cows in milk at any one time. The experience of the Departmental Farms has been that " through good management the age at first calving has been considerably reduced, thereby increasing the productive herd life. By judicious husbandry, the interval of calving has been so adjusted that the periods of productivity have been lengthened." The lengthening of the lactation period, which follows upgrading is another method which will help to realize the target of a 112,000 extra cows in milk by 1968.

The aim in milk production is to produce our minimum requirements in 1968 of 495 million pints. It was shewn that this target could be attained first through raising the average milk yield from 1.2 pints per cow per day to 3.2 pints, which is a very modest increase, and secondly, through ensuring that 112,000 cows more are milked in 1968 in addition to the number being milked at present. Realization of the yield target is tied up almost entirely with correct and proper feeding which in turn depends on the development of pasture. Almost the entire herd of the cows now in milk is in the Wet and the Semi-Arid Zone. These areas will be assisted to establish more succulent and nutritious pasture. In addition, pasture will be established on suitable Dry Zone land. Parts of this area, the Tamankaduwa District for example, are considered ideal for pasture and animal husbandry. The development of these areas will result in increased stocking. Furthermore, there are even at present a considerable number of animals not being milked largely because there is no organised outlet for the sale and disposal of the milk. Once the activities of the Milk Board are extended to cover the whole Island, the milking of these animals will commence. Finally, a breeding programme will be commenced to upgrade the indigenous nondescript cattle.

The investment required to attain this target is somewhat difficult to determine as animal husbandry and milk production is carried on by a multiplicity of producers. The investment cost of the whole programme for animal husbandry comprising the schemes for milk, meat and egg production, has been tentatively estimated at Rs. 109 million. This includes both private and public investment and covers such items as the development of pasture, the cost of milk sheds, milk rooms, deep litter houses for chickens, the capital cost of expanding the Veterinary Service and so on. After the implementation of this programme the value of the output of milk, meat and eggs in 1968 would be over Rs. 210 million, in contrast to the Rs. 87 million at present.

MEAT

The plan for the development of animal husbandry in general and milk in particular outlined in the earlier section will obviously affect the meat supply too. As it is, the country is virtually self-sufficient in meat products. It has been estimated that the quantity of meat from local animals available for consumption in 1957 was 253,000 cwt. This is based on the figure of slaughterings. Meat imports amounted to 23,000 cwt. The total intake of meat was of the order of 276,000 cwt. It will be seen that domestic production amounts to about 92 per cent. of our requirements. The problem is essentially one of ensuring that production keeps pace with the growth in requirements. On this basis our minimum requirements of meat in 1968 will be 381,000 cwt. and at the adjusted rate of consumption 386,000 cwt. will be required. The plan aims at increasing local production by 1968 to 381,000 cwt. The balance 5,000 cwt. is assumed to be imported and to consist of types and qualities not produced locally with ease.

Just as in many other commodities there are two courses whereby the increased quantity of meat can be obtained. The first is to increase the carcass weight of each animal slaughtered, and the other to slaughter an increased number of animals.

The average carcass weight of locally slaughtered animals is quite low. This is caused through the absence of a systematic breeding policy designed to upgrade the cattle. The cattle that are slaughtered fall into three distinct classes. The largest proportion of slaughterings (about 70 per cent.) is drawn from Sinhala cattle found in the Dry Zone. These animals are semi-wild and weigh about 250 lb. with an average carcass weight of about 125 lb. "They multiply in the jungles of the Wanni without a proper system of breeding, feeding and management. Due to long years of neglect they are, therefore, small in stature". With the establishment of commercial milk production and pasture in the Dry Zone a programme of grading up these animals will be put into force. The object is to upgrade them either to Scindi or Tharpakar levels. The result will naturally be an immediate increase in milk yields as well as in live weight. It is reckoned that the average carcass weight even of the first cross will show a substantial increase.

A scheme for upgrading the cross bred cattle on coconut and tea estates which constitute about 20 per cent. of the meat supply will also be put into effect. Increasing the carcass weight of these animals will be carried out by upgrading to European levels the upcountry cattle, and to Indian standards the cattle on coconut estates. For the former, stud bulls will be issued from the Departmental farms at Bopatalawa and Ambawela, while Scindi bulls will be used for the latter category. Wherever and whenever possible these will be supplemented by artificial insemination.

Buffaloes provide about 10 per cent. of our present meat supply. The average carcass weight of an animal is much greater than that of neat cattle, the average weight being around 300 lb. It is proposed to upgrade the local buffalo to the heavier Indian breeds such as Murrah. The beneficial effects of this would be reflected both in the milk and meat supply, as it is a dual purpose animal. When up graded to the full Indian standard the Department of Agriculture anticipates that the carcass weight of an animal would be about 800 lb.

The upgrading of cattle even with the intensive use of artificial insemination techniques requires a considerable period of time. From a breeding viewpoint at least 4 top crosses are required if the desirable characteristics of the sire are to be reproduced among the nondescript cattle. Hence the full effects of upgrading will not be reflected at the end of the 10-year period. The carcass weights of the different animals at the end of the 10-year period are therefore assumed to be :—

	Present average carcass weight (lb.)*	*Ultimate carcass weight expected by Dept. of Agriculture* (lb.)	*Carcass weight at end of 10 year period* (lb.)
Neat Cattle	138	600	210
Buffaloes	300	800	400

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For the reasons given above the increase in carcass weight adopted here is more modest than that expected ultimately by the Department of Agriculture. If this modest target is realised, the contribution to the total meat supply by the same number of animals as were slaughtered in 1957 would be :—

	No. of Carcasses	*Carcass weight* (lb.)	*Total weight* (cwt.)
Beef	177,770	210	333,000
Buffaloes	2,170	400	7,750
			340,750

The minimum requirements of meat in 1968 were earlier shown to amount to 381,000 cwt. If the pattern of meat consumption as between the different types of meat i.e., beef, mutton, pork, &c. is similar to that in 1957, the 381,000 cwt. required in 1968 would be divided as follows :—

Beef	305,000
Buffalo	8,000
Mutton	45,000
Pork	23,000
Total	381,000

In 1968 the requirements of beef and buffalo meat together amount to 313,000 cwt. The process of upgrading alone, on the basis that the same number of animals are slaughtered in 1968 as in 1957, would result in our requirements being more than amply met.

The fulfilment of this programme thus depends on two conditions being satisfied. The first is that an equivalent number of animals should be available for slaughter in 1968, and secondly that the scheme for upgrading occurs. Regarding the first, the Agricultural Plan has stated " we have slaughter stock in excess of effective demand, making it necessary to find ways and means of regulating the supply by improving marketing arrangements, finding an outlet for excess stock and reducing the price to the consumer ". This contention is also borne out by the statistics on the livestock population :—

Year	*Total numbers of Cattle*
1952	1,188,769
1953	1,228,718
1954	1,277,310
1955	1,432,755
1956	1,450,156

Despite slaughterings there has been no dimunition in the number of cattle. The programme for upgrading local stock has been outlined both above and in the section on milk. Upgrading of cattle for milk has inevitable repercussions on the size and weight of animals for meat. To the extent that the milk programme is successful, the success of the meat programme is assured.

OTHER MEAT

The other types of meat consumed on a fairly wide scale are mutton and pork. In 1957 approximately 33,000 cwt. of mutton and 17,000 cwt. of pork were consumed altogether. Of this locally produced mutton amounted to 22,500 cwt., and 13,000 cwt. of pork were obtained from local animals. Our minimum requirements in 1968 of these two products would be in the region of 45,000 cwt. of mutton and 23,000 cwt. of pork.

The average carcass weight of the goats slaughtered at present is around 22 lb. Imported Indian goats, however, are " more than double the size of a local goat ". The Department of Agriculture has formulated a scheme to upgrade local goats at the end of which the average carcass weight of an animal will be at least 33 lb. If the production target is to be realized, in addition to upgrading, 36,800 more animals with an average carcass weight of 33 lb. each would need to be slaughtered.

What are the prospects of increasing the number of animals ? Goat farming enjoys certain advantages over other types of livestock which should ensure an increasing supply of animals for slaughter. Goats thrive on scrub jungle of which there is plenty in the Dry Zone areas. The problem of feeding is thus not a limitation in the case of these animals. In addition, the capital required to start goat farming is not large unlike, for example, in cattle breeding. This is accordingly an excellent enterprise for small farmers and peasants. Furthermore, goats multiply rapidly so that producers would enjoy a relatively steady cash income. Finally, as there is a steady demand for both goats' milk and mutton, producers need not fear a slump in the market. The retail prices of mutton at present are quite high and provided that producers can organize themselves into Co-operative Societies for the disposal of their goats this can provide a not inconsiderable supplementary income. The foundation stock whether to expand or start this enterprise will be provided by the Department of Agriculture from its three major goat farms. The purchase of these animals could easily be financed through the Multi-Purpose Co-operative Societies, In short, there is no real impediment to achieving self-sufficiency in mutton by 1968.

So far as pork and pork products are concerned our consumption in 1957 amounted to 17,000 cwts. of which 13,000 cwts. were from locally reared animals. By the tenth year our requirements would have risen to approximately 23,000 cwt. Local production should therefore increase by a further 10,000 cwt. of pork if imports of this meat are to be eliminated. It is interesting to note that the major import of pork was in the form of ham, bacon and salted pork. Of our imports 3,844 cwt. of pork products these accounted for 2,111 cwt. (55 per cent.). This implies that adequate processing facilities should be established to enable consumers to obtain their requirements of these products too.

Of all livestock pigs are the most efficient convertors of feed into meat. " Pigs can be regarded as the most efficient animals in food production in that they are most prolific in breeding, most efficient in the conversion of feed into edible meat, and require very little care and housing for rearing. The nature of the food they consume might otherwise be wasted such as garbage, garden and market wastes ". Pigs are reared at present largely in the maritime areas while some estates maintain a herd for the sake of the manure. Along the coast pigs are reared on a free range basis, scavenging for their food. On the estates on the other hand they are housed in sheds and stall fed ; these animals reach a very satisfactory weight of around 120 lb. carcass weight in the fairly short period of eight to nine months. But the general average carcass weight of a local pig is not more than 75 lb. As an average this is quite good and hence no programme for upgrading them, as in the case of the other animals, is visualised. The additional 10,000 cwt. of pork would need to be produced solely by an increase in the number slaughtered. At an average carcass weight of 75 lb. 15,000 animals more would have to be slaughtered by 1968.

This increase in the number of pigs will be obtained both by extending the rearing of these animals among existing producers, and inducing others to commence such an enterprise. Many more estates, both tea and coconut, are likely to keep an increasing number of pigs as the liability under the Food Production (Estates) Act is met by rearing pigs. In addition, it has been proposed in the Agricultural Plan to encourage pig breeding in certain parts of the Dry Zone in colonization schemes. This is, however, unlikely to meet with much success because of the prejudice many people have against pigs. But a definite expansion in pig rearing can be expected if a pig processing factory is set up close to Colombo. With such an assured purchasing centre many people in the vicinity will be only too ready to keep pigs on a commercial scale. The Department of Agriculture will set up at the same time a large pig farm at Welisara to provide potential producers with their requirements of breeding stock.

A pig processing factory is already in existence in Nuwara Eliya. It utilizes the pigs raised in the upcountry areas to produce a variety of pork products. It would be advantageous if another factory is established, as proposed in the Agricultural Plan, in the vicinity of Colombo. Colombo is of course the largest consuming centre and as important, many producers are concentrated in the neighbouring areas.

MARKETING FACILITIES FOR MEAT PRODUCTS

The lack of a market where a producer can obtain a fair price for his animal has been one of the most powerful deterrents to breeding animals for meat. At present the purchase of animals for slaughter is handled entirely by middlemen and commission agents. The buyer is in a monopsonistic position and the producer almost never realises the true market price for his animal. To remedy this regular cattle auctions will be held at different centres. Such auctions will be organised either by local authorities or by the Meat Board, recommended by the Ministry of Agriculture. This Board is to have a variety of duties and functions including slaughtering, processing, storage, &c. Such a board, when established and if run efficiently, can contribute very substantially to the development of animal husbandry.

EGGS

It has been estimated that in 1957 the total intake of eggs was of the order of 126 million. This estimate has been derived by applying to the 1957 population the average number of eggs consumed per head of the population obtained from the Consumer Finance Survey. The number of eggs imported in the same year was 26 million valued at just over Rs. 3¼ million. The difference between total consumption and imports which is 100 million eggs has been assumed to be the domestic production in 1957. Domestic production met about 79 per cent. of our requirements.

At the adjusted rate of consumption our requirements of eggs in 1968 would be approximately 196 million. Self-sufficiency by 1968 would therefore call for an additional domestic production of about 96 million eggs. There is no reliable figure of the annual egg yield per layer. An arbitrary figure of 125 eggs per bird has been taken to represent the average annual yield. This is not excessively high, and many producers already obtain this yield. At this yield an additional 815,000 laying hens are needed if no part of our consumption requirements are to come from abroad. The target in the case of eggs is to produce locally all our requirements at the adjusted rate of consumption.

Poultry keeping is proving to be increasingly popular among all classes of people. Just as in the case of pigs, the maritime areas, especially in the Negombo and Chilaw Districts, lead the way followed by others such as Puttalam, Mannar and Jaffna Districts. The majority of egg producers at present are of the " backyard " type ; most of them keep a few hens and aim to meet only their own consumption requirements. The hens have largely to forage for themselves, augmented on occasions by supplementary grains. There are a few producers, however, who house their hens in fairly intensive conditions and these hens are reared, sometimes almost entirely, on purchased feeding stuffs. The large commercial egg producers with a flock of a few hundred birds are very few in number.

If the national flock is to increase by an additional 815,000 layers, producers should be in a position to obtain their requirements of reliable stock of a high laying strain without difficulty. Although it is possible to import day-old sexed chicks, producers will need to depend very largely on local sources for their foundation stock. At present the demand for such foundation stock is satisfied both by private enterprise and by the Department of Agriculture. But " the Department of Agriculture uses its incubators only for the hatching of eggs from pure bred stock, and even then in very limited numbers. Production of day old chicks in Government Farms, however, did not expand sufficiently to meet this demand ". Thus one of the main factors inhibiting the growth of this industry has been the failure to provide poultry producers with good stock at reasonable prices. This is to be remedied by the installation this year of 11 large incubators at some of the major Departmental Farms. This policy will be continued in the succeeding years until poultry producers in all the Districts are adequately served. The average flock size in these Farms will also be increased so that the incubators need not lie idle for lack of eggs. The selling price of the fundation stock has been set at such a reasonable level by the Department that egg producers will find it well worth their while to maintain a large number of layers.

The other main problems facing egg producers, apart from the marketing aspect, are housing, feed and their need for ancillary services such as Veterinary aid. It was pointed out earlier that the majority of egg producers are of the backyard type who produce largely for their consumption and sell only those eggs in excess of their needs. At present the average size of the flock rarely exceeds 10/15 layers. In the future, however, an increase in the average flock size can be expected because of the rapidly increasing popularity of the deep litter system. A deep litter can be established in quite a small area at low cost where hens are reared under intensive conditions. Consequently existing producers will find it economic to increase the size of their flock while many others will commence the rearing of poultry.

The chief problem in increasing the number of hens will be that of feed. Poultry are large and heavy consumers of grain. In a grain short country using grain to feed poultry is not very rational. The feed problem is not urgent at present largely because the hens forage for themselves and subsist on the kitchen and garden refuse. Once the deep litter system becomes popular and the number of hens increases, this problem will come to the forefront. It is true that with the development of the Dry Zone an increasing quantity of grains such as kurakkan and maize will be produced. This will tend to alleviate the feed problem. Nevertheless to obviate a breakdown in the schemes for the expansion of animal husbandry the possibility of obtaining coarse grains from grain surplus countries on favourable terms should be investigated.

THE VETERINARY SERVICE

There is one other factor which affects vitally the entire animal husbandry programme. This is the efficiency of the Veterinary Services. The Department of Agriculture states that in the case of poultry, "a condition causing devastating mortality strikes most villages at least once a year" and "that the estimated annual loss to the present poultry producers by diseases is over Rs. 5 million annually, and include an annual loss of over 13 million eggs". Among cattle diseases like Hæmorrhagic Septicæmia, Foot and Mouth, and among fowls Ranikhet and Fowl Pox either kill off or impair a considerable part of the livestock population each year. If animal husbandry is to flourish the Government must provide a really first class Veterinary Service.

One of the chief reasons for this state of affairs has been the lack of adequate staff. At present there is one Veterinary Officer for about 2-3 D. R. O's Divisions. This officer is expected to attend to all the Veterinary work on Government Farms; attend to the prevention and curing of infections and contagious disease among all livestock in his area; organise vaccination campaigns of poultry, cattle, dogs; inspect meat on behalf of local authorities; do all the Artificial Insemination Work and also supervise the Animal Husbandry Work on estates. It is clear that burdened with all this work, the Veterinary Officer finds it difficult to provide a really efficient service to breeders and livestock producers.

The whole Veterinary Service will therefore be reorganised. In those D. R. O's divisions where there is a heavy concentration of livestock a Veterinary Officer will be in charge of a single division and have a sufficient number of assistants to enable him to carry out his multifarious responsibilities. A Veterinary dispensary with facilities to carry out the routine diagnosis and treatment of diseases will also be established. In addition to these Provincial Laboratories the Central Research Laboratory will undertake work which the Provincial Laboratories are unable to perform as well as conduct research into the various veterinary diseases and conditions inhibiting the development of livestock.

The Veterinary Service will have a special responsibility laid on it so far as the programme for grading up local cattle, especially through Artificial Insemination techniques, is concerned. In this programme great emphasis is laid on upgrading the nondescript local stock. A really efficient Artificial Insemination Service reduces the period required for the grading up of these animals which is in itself a significant contribution to the whole programme. The Veterinary Service because of its specialized knowledge especially in regard to advanced techniques of Artificial Insemination Work, will be in particular charge of this aspect of the programme.

A SUMMARY OF THE COSTS AND BENEFITS

The investment costs in the 10-year period of the entire programme for the development of animal husbandry has been broadly estimated at Rs. 109 million. This covers both private and public investment and includes the capital costs of pasture development, dairies, Veterinary Laboratories, &c. Provision for the expansion of the activities of the Milk Board in the sum of Rs. 31 million has been made separately.

The value of the total output of milk, meat and eggs at the end of the 10th year is estimated at Rs. 211 million. The value of the output at present has been estimated at Rs. 87 million. This programme represents an increase in output of 143% over the 10 years.

In conclusion, the development of animal husbandry on this scale will contribute materially to the alleviation of unemployment and under-employment in the rural sector. To the extent that the organized plantation sector takes up animal husbandry as a subsidiary enterprise, wage employment will increase. On the other hand the development of animal husbandry in the peasant sector will reduce the severity of under-employment. A distinct advantage in animal husbandry is that there are no marked seasonal changes in the labour requirements. Hence the addition of this enterprise will even out to some extent the marked seasonal pattern of labour requirements.

TOBACCO

CIGARETTE AND OTHER TOBACCO

The cultivation of cigarette and cigar tobacco is carried on locally even at present. Local production in 1957 has been estimated at 5.75 million lb. of cured leaf. This was supplemented in 1957 by imports of about 1.9 million lb. of cured leaf. Local production thus met about 3/4ths of the demand. By 1968 if our consumption of tobacco per head of the population is unchanged, our requirements of cured leaf would amount to 10.5 million lb., and at the adjusted consumption level the requirements would be 11.5 million lb. The objective in this instance too is to produce locally our requirements of tobacco on the unadjusted basis, leaving the difference between this and our requirements at the adjusted level to be imported. This would take account of the demand for imported cigarettes, cigars and tobacco. On this basis local production should increase by an additional 4.7 million lb. of cured leaf.

Tobacco is cultivated both under rainfed conditions and with irrigation. At present the greater part of the acreage is cultivated on high land under rainfed conditions, a much smaller proportion being cultivated " on well drained paddy land under controlled irrigation during Yala ". Needless to say, the yield per acre differs quite substantially, the rainfed area yielding around 400 lb. of cured leaf, while the irrigated acreage gives as much as 600/800 lb. an acre. As the expansion of the tobacco acreage is to be confined largely to growing it under irrigation, the average yield in the future will approximate to 700 lb. of cured leaf. An additional acreage of 6,750 acres should be cultivated if the target output is to be produced.

The Ministry of Lands has decided that in the future only 3 acre feet of water will be issued during the Yala season. This is inadequate at existing rates of water usage for paddy cultivation but sufficient for the cultivation of subsidiary crops such as tobacco. The aim is therefore to induce cultivators to grow tobacco during Yala on their paddy fields. This policy has already commenced in Gal Oya and is proving quite successful.

The Department of Agriculture has initiated a scheme to bring a further 1,800 acres under cultivation by 1961. This will now be extended until the whole of the additional acreage needed for self sufficiency is under this crop. Land, as pointed out above, is not likely to be the limiting factor. No difficulty in inducing cultivators to take up this supplementary crop is anticipated once the feasibility and profitability of growing tobacco is proved to them. Tobacco is a crop with a high value of output per acre and is also quite labour intensive. It is ideally suited to alleviate the twin ills of the peasant—low incomes and under-employment. Cultivators are not faced with any land development costs either as the tobacco crop will be grown on the already developed paddy lands during the Yala season.

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To assist growers short-term loans will be granted through Co-operative Societies to raise seedlings, purchase fertilisers, and to meet their curing expenses. The time span of the loan will cover the production period, and the loan will be recovered in full together with interest on sale of the crop. In addition to these expenses cultivators will find it necessary to construct barns and handling sheds. The capital expenditure incurred for the construction of these items is quite substantial but once constructed, they last a comparatively long time. At present cigarette manufacturing concerns provide growers with assistance both short-term as well as medium term for the construction of barns. These concerns will in all probability be willing to continue providing assistance in this form to cultivators. Some regulation of the terms of recovery may become necessary, if the conditions imposed on cultivators are made too onerous. An alternative would be for Co-operative Societies to handle this part of the cultivators' production needs.

BEEDI

Beedi is not grown here on a commercial scale at present. All our requirements of beedi tobacco are imported from India and in 1957 the imports amounted to 2.8 million lb. of cured leaf valued at Rs. 11.6 million. Under the Tobacco Agreement with India the import of beedies is to be progressively reduced so that, apart from other considerations such as saving foreign exchange, a programme for cultivating beedi tobacco locally is in immediate necessity.

At present consumption levels our requirements of beedi tobacco in 1968 are estimated at 3.9 million lb. At the adjusted rate of consumption our requirements will be around 4.2 million lb. There is, however, a strong probability that our requirements in 1968 will not be above the lower estimate as with higher incomes and improved standards of living a change of taste tends to take place and consumers switch over from beedies to cigarettes. To ensure that 3.9 million lb. of cured leaf are produced in 1968 approximately 7,700 acres yielding on the average 500 lb. an acre will need to be cultivated. Just as in the case of cigarette tobacco, land will not be the limiting factor. In the case of beedi tobacco, however, cultivators may at the outset be somewhat reluctant to venture into an unfamiliar enterprise. Nevertheless, provided that a programme of production, together with an efficient advisory service and an organisation for marketing the cured leaf is established, this initial reluctance should be overcome without excessive difficulty.

The existing programme of the Department of Agriculture extends up to 1960. By that time it is planned to cultivate 4,000 acres in the following districts: —

	Acres
Uva	1,450
Matale	450
Anuradhapura	450
Hambantota	450
Jaffna	600
Vavuniya	600
	4,000

This is only the first stage in the full programme as the Department will thereafter embark on a scheme to bring a further 3,700 acres into cultivation by 1968. Growers of beedi tobacco, just as in the case of cigarette tobacco growers, will be provided with facilities to obtain their short-term credit needs through the Co-operative Societies. Unlike in cigarette tobacco, however, there are at present no organised outlets for growers to sell their crop. This function will be taken over by the Co-operative Society. The Society should purchase the leaf after grading at a guaranteed price fixed well in advance. The Co-operative Society would welcome this since, in addition to the extra business, compulsory marketing through it would serve as additional security for the short-term loan granted to the cultivator. The curing of the leaf could quite easily be undertaken by the Co-operative Society, for which purpose the Society will construct handling sheds and curing barns.

There are two possibilities for the Co-operative Society to dispose of the leaf. The Society could in the first place roll its own beedies, and market it through the usual retail channels. The manufacture of beedies is usually carried out on a very small scale, and this process should be quite within the capabilities and competence of a Co-operative Society. The alternative would be for the Co-operative Society to sell the leaf to the present importers and manufacturers of beedi. For this purpose it may be necessary in the beginning to bring beedi under the Agricultural Products Regulation Ordinance. But as domestic output expands and ousts the imported leaf, manufacturers will necessarily turn to the local producers for their requirements of leaf. If it is found necessary, the purchase price of the cured leaf from the Co-operative Societies by manufacturer could be fixed in advance through mutual negotiation.

The production programme outlined above has sought to show that there are no insuperable difficulties in expanding the output of locally grown tobacco to the point where virtually all our requirements are produced domestically. Production will be concentrated on paddy lands which would otherwise lie fallow during Yala. There are therefore no costs associated with the development of the land. The other requirements of growers, such as planting material, fertilizers, &c., will be met through short-term loans either from manufacturing concerns or through Co-operative Societies. A certain amount of investment will be needed for the construction of sheds and barns but this will not be excessively large. The value of the output, on the other hand, will be quite considerable. At current ex-farm prices the cigarette and other tobacco produce will have a gross value of Rs. 27.9 million, and the beedi tobacco to Rs. 16.6 million. Together the gross value of output of tobacco growers as a class will amount to Rs. 44.5 million, in contrast to the present figure of Rs. 13.7 million.

POTATOES

Potatoes are another commodity on whose import a considerable amount of foreign exchange is spent. In 1957 approximately 722,000 cwt. costing as much as Rs. 15 million was imported. Since local production is as yet infinitesimal, the total quantity consumed that year is not very different. At the same level of consumption our requirements would increase to 1 million cwt. by 1968; at the same average import price as in 1957 this would involve a foreign expenditure of over Rs. 20 million. At the adjusted consumption rate our requirements are estimated at 1,018,000 cwt. It is planned to grow locally our entire requirement of potatoes as calculated at the adjusted rate.

A really determined effort to grow potatoes locally was made only quite recently. The results clearly indicate that they can be grown here with considerable success. An average yield of 5 tons per acre has been obtained and on this basis slightly over 10,000 acres should be harvested if our entire requirements are to be met from domestic production. In general potatoes cannot be grown in the field successfully below 3,000 feet in tropical areas. The scheme of the Ministry of Agriculture quite correctly aims at cultivating with potatoes land above this altitude. All this land will normally be situated in the Wet Zone in the up-country areas and, since some patna land too has been found suitable for potatoes the lack of suitable land is not likely to prevent the implementation of this scheme.

The Department of Agriculture has already embarked on a scheme to grow and encourage the growing of potatoes. In 1957 potatoes were grown at Rahangala on a fairly large scale and there were trial plantings at Bopatalawa, Ambawela and Nuwara Eliya. They all proved that potatoe growing can be undertaken quite successfully in the up-country districts. A further 100 acres were brought into commercial production in 1958, and in the succeeding years the planned acreage under commercial production will be progressively increased. This increase in the acreage will be maintained until the whole of the required acreage will be cultivated.

Very little investment in land development is needed as the extents earmarked for potatoes do not require extensive clearing or development prior to planting. In addition, irrigation costs will also be slight as potatoes will be grown almost entirely under rainfed conditions ; the only exception may be in Welimada where some irrigation may be required. The main need of cultivators will be seed potatoes. To prevent the lack of seed potatoes from impending this programme a Nucleus Seed Station in the Horton Plains of about 200 acres is being established. In addition, seed multiplication stations will be set up at various places in the upcountry to distribute seed potatoes in adequate quantities for commercial production.

The other production hazard is that of disease. It has been said that "the promotion of potatoe growing in this country would be determined largely by the success with which bacterial wilt hazards are estimated". The Department is alive to this risk and vigorous preventive measures are planned. Hence the distribution of wilt will be mapped and the heavily infested areas will be excluded from the programme. Furthermore production will be restricted within the hill country as the indications are that such hazards increase progressively at lower elevation.

The implementation of this programme will make us self sufficient by 1968. The extent of the undertaking should not be minimised. It is planned to increase production from an absolutely negligible quantity to over a million cwt. The gross value of this output will be over Rs. 32 million.

CHILLIES AND ONIONS

The prospects of achieving self-sufficiency in these two commodities by 1968 are very bright. Both of them are already grown here quite extensively and, in fact, already meet a substantial portion of our requirements. From the angle of saving foreign exchange chillies are the more important since in 1957 over Rs. 30 million was spent on imports to complement local production ; the import of onions on the other hand is quite marginal to local production, the import cost of this in 1957 being only Rs. 15,000.

Chillies are grown throughout the country and in 1957 approximately 30,442 acres carried this crop. Local production amounted to around 282,000 cwt., which gives an overall average yield per acre of 9.3 cwt. Unfortunately 1957 was a relatively bad year for this crop since the average yield per acre was relatively low. The comparative yield during the previous couple of years was :

1955	11·0 cwt. per acre
1956	13·3 cwt. per acre
1957	9·3 cwt. per acre
Average of 3 years	11·2 per acre